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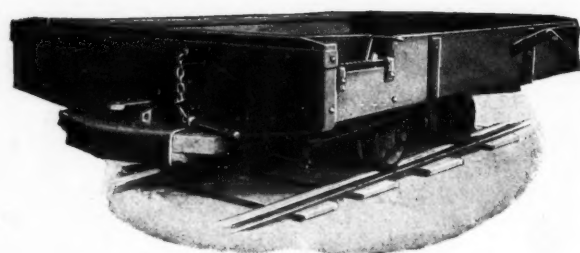
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COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER, Editor

Volume 24

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Number 9

Practical Moves

GOVERNOR PINCHOT stated the case of the public well in his address to the hard-coal miners and operators and the public at Harrisburg on Monday. The millions of people dependent on anthracite to keep warm next winter do not want a strike; they want and have a right to expect the contending parties to get together, even at this eleventh hour, to avert the concerted withdrawal of the mine workers next Saturday. To accomplish this he is proceeding in the right way. No published notes, just confidential conferences, sensible negotiations through a third party. If anything will save the day it is this method. Hope, seemingly scant, lies in this direction.

And while Governor Pinchot is undertaking this thankless task, co-operating we are told with the administration at Washington, the Federal Fuel Distributor is carrying out the policy of Washington of getting the country ready for a winter without more hard coal than we already have. This is practical procedure. It is common sense for the government to accept the soft-coal operators' assistance in distributing their product as a substitute and it is practical business to enlist the consumers' aid through their state officials.

The Third Line of Defense

PREVENTION is better than cure. Nevertheless it is well to cure an evil if it cannot be prevented and it is well to escape from an evil if it cannot either be prevented or cured. Thus in the matter of mine explosions; the best way is to prevent them, the next best way is to extinguish them when they occur and the third line of defense is to make a way of escape for those who, not being killed by the blast, are exposed to the noxious atmospheres it creates and so have their lives jeopardized. The last way is not a counsel of perfection, but if it were provided it would save a large percentage of the men who are caught in a mine where an explosion has occurred.

Rescue chambers have been proposed and provided. Even metal mines have them. They need to be quite airtight, for they must be used till the area in which they are placed has been explored. That may be days after the accident has occurred, and during all those hours the air is getting fouler from leakage from without and from breathing, if not combustion, within. In metal mines the use of compressed air pumped from the surface provides that the pressure will be always outward. In fact the problem is to protect the chamber from the building up of such a pressure within, as it might suddenly rupture its walls.

Many a man has found help from a handkerchief thoroughly soaked in the liquid of the container in his dinner pail. It keeps out the hydro-carbons and so may

save his life, but if, as usually happens, carbon monoxide is present, the wetted handkerchief is powerless against it. Something should be provided that will not only give the worker safety but will not interfere with his mobility. He should be able to provide for his own escape to the surface, or should exit be cut off by reason of rockfalls he should be empowered in some way to travel to some place of shelter where the air is free from contamination. We have means now of absorbing carbon monoxide and all the deadly gases that the chemistry of war and of industry have devised, and surely it should be an easy matter to make a mask which will carry a man through any mine atmosphere, however badly poisoned by deadly gases, so long as enough oxygen is present to support respiration.

Negotiation and Arbitration Rejected

THERE may or there may not be a strike in the anthracite mines next month. But if there is the basic cause will be plain. The country is fast coming to a realization that the "rule or ruin" policy of the United Mine Workers is again in force. It ruled in 1922 and it may rule again. The ruin that it can accomplish in this instance is all the more apparent as the consumers' anger rises and threatens the boycott of anthracite. To say that the union is indifferent since it covers both hard- and soft-coal fields and the loss of one would be the gain of the other is to overlook the fact that it will be the non-union fields that will furnish the bulk of the substitutes if they are needed.

The workers in the hard-coal mines are not up in arms demanding the check-off or a 20- to 30-per cent increase in wages. Nor are they keen about a strike again so soon after the last one. Some of the debts are not paid up and, furthermore, winter is coming. So finds the impartial and keen observer William Hard. Yet he finds that if a strike is called the men will loyally go out and uncomplainingly support it.

If the workers are not downtrodden, desperate and insistent on some eleven demands, why this perseverance of the union officials? Perhaps the answer in part at least is that Mr. Hard did not get the whole story. There are in sections of the anthracite region groups of malcontents. Cappellini won his way back to a job with the union by teaching and preaching discontent. He is now one of the leaders and sits in the councils of the union, a member of the scale committee which meets off and on with the operators at Atlantic City. District President Golden is by no means a conservative.

The strike of 1922 netted the hard-coal workers nothing but the satisfaction of having helped the soft-coal workers win their strike. The local union leaders from the anthracite region have told their constituents that they will not come back from Atlantic City with empty hands. It is to make good on their jobs as union offi-

cials that the country is threatened with a strike and may have one.

There is a significant sentence in the Anthracite Report of the Coal Commission. It reads: "*The union must justify itself.*" It is not headed in that direction when it refuses to negotiate with the operators and likewise refuses to submit to arbitration. It is now the same wearisome story of 1919 and of 1922. It is collective threatening and not collective bargaining. It was the ultimatum on the check-off in July; this month it is the ultimatum on the 20-30 per cent wage increase. There are those who hold that John L. Lewis is not in sympathy with these tactics this year, and that he is letting the hotheads have rope. It may be that this situation does not appeal to him, but if it is not to his liking he conceals it very well. His bellicose threat to give the operators the "trouncing" of their lives savors of that "swashbuckling" mentioned in one of the Coal Commission reports. He is leading with his customary vigor.

No, the union is not intent on justifying itself. The union leaders are intent on bringing home the bacon—justifying their jobs. What they take back must be showy—something that they have wrung from a reluctant opposition. Things like the elimination of the 12-hour day, the continuing umpire, adjustments in working conditions, minor matters corrected that would make for less friction and satisfied workmen, increases in wages that affect the individual here and there—matters that can be had by straight negotiations—are not for them.

Anthracite Production Costs

TIME alone will show how generally useful such a complete and comprehensive statement of the cost of production of anthracite as has been published by the Coal Commission will be in educating the coal-consuming public to the facts. Even though Mr. Wing and his associates have stripped the maximum of technical and professional lingo from their report to the Commission, it is quite certain that were the complete details to be put in the hands of every hard-coal consumer, 95 out of every 100 would either refuse to exert the mental effort to read and understand it or would fail to take in the significance of its findings. It was so with the report of the Federal Trade Commission in 1919 covering the same subject and prepared by the same authors.

Too many will hasten to garner from this report facts to support stands previously taken. The honest student, however, can find therein a simple and clear statement of the facts. In the first place it is clear that this Commission, like its predecessors, the Fuel Administration and the Federal Trade Commission, had no difficulty in getting the facts. There is no mention that they were unable to learn all they wanted. No "secrets" are withheld from duly constituted authorities. Big companies and little companies furnished their figures—the high-cost and the low-cost, the "rail-road" and independent producers are all included.

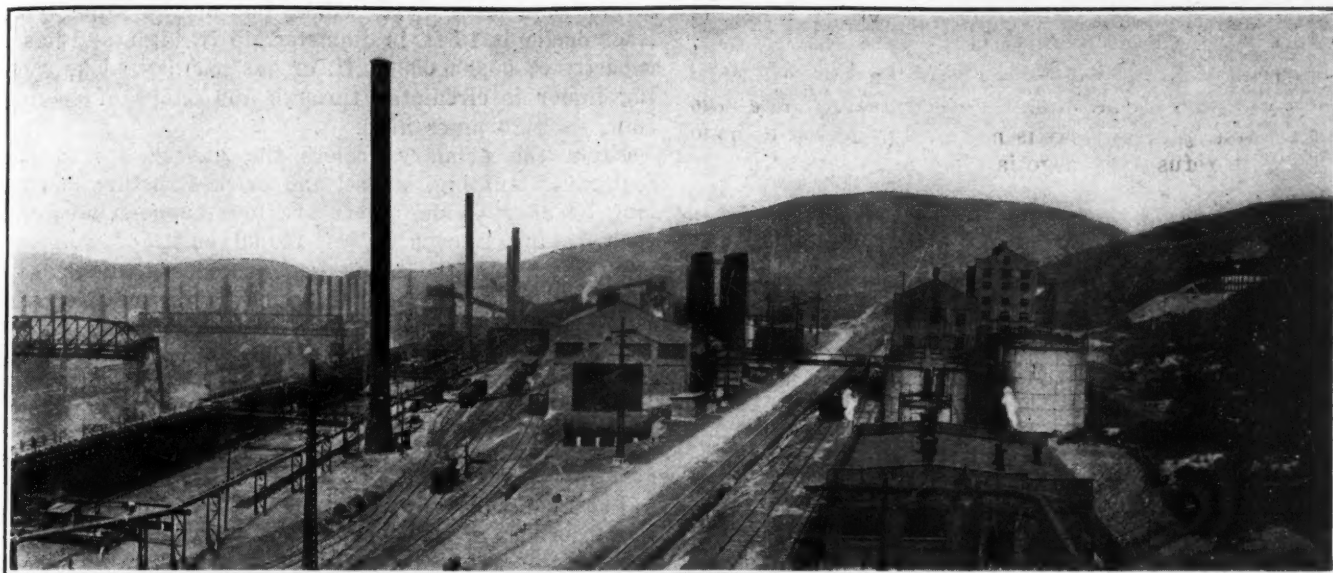
Nor does the Coal Commission fear that any of the figures were not correct. It has satisfied itself on that score. No revision was made of figures given in sworn reports, the experience of the Federal Trade Commission indicating that "any effect on the total figures of a few false statements was negligible so far as affecting any general results."

In its treatment of "margin," that much-abused figure that does not represent profit but which so often is taken for it, the report is fortunate. It points out that the margin between sales realization and f.o.b. mine cost is net operating income before deduction of interest and federal taxes. "It is not a good measure for arriving at the relative profits of different operations." One operator, for instance, may have a heavy investment in mining machinery per ton of output and thus show a relatively low labor cost, while another may have a higher labor cost because he has no investment in labor-saving machinery; for this reason it says, "In the case of the first operator the margin must be larger in order to give an equal rate of remuneration to the larger amount of invested capital per ton of product." In the past ten years, and notably in the past three or four, the anthracite industry has been investing heavily in new equipment in its program of electrification.

Labor costs of production are shown to have increased 145 per cent from 1913 to the first quarter of this year, and it is stated that this is not all to be accounted for by increases in wage scales, but in part by the greater amount of labor necessary, in the later years, to produce a ton of coal, due to changes in the physical conditions in the mines, such as the mining of seams which formerly were considered too poor to work, etc." It is quite true that the coal now mined is deeper and thinner than ten years ago and that the cost in man power has increased thereby. According to the figures of the Geological Survey that increase has been slight, in fact the average output per man per day has risen from 2.02 net tons in 1913 to 2.09 tons in 1921. The weighted average increase in wage scales appears to have been not less than 125 per cent, according to data previously published by the Commission. It is evident therefore that the industry must be given some credit for having improved its practices and for having very nearly maintained the efficiency in output per man per day despite the added burden imposed by more difficult mining conditions. The greater part of the increase in labor cost must therefore be attributed to the gain in rates of wages.

It is the profits of the producers, however, that interest the consumer. The Commission has not yet issued its conclusions on this matter, having yet to report on the investment on which profit is to be calculated. It is stated, however, that whereas the "margin" of the producers averaged nearly 38c. per ton of total output in the three years 1913-1915, in the six months ended last March it was, on a comparable basis, \$1.20 per ton of total output. That is, there was an increase in the ten years of some 316 per cent in the margin between mine cost and selling price.

If the dollar of today is worth in buying power but 67c. compared with that of 1913, the anthracite mine worker is getting 50 per cent more wages, on the average, in actual worth—or real wages; as the economist puts it—than he was in 1913. The producer is getting, by the same method of calculation, 112 per cent more, out of which he must pay his federal taxes. The margin of today, \$1.20, is worth 80c. in buying power, as against a margin of 38c. before the war. What is paid in federal taxes is not as yet stated, but if it is half the margin, as was estimated for 1918, then the real money left for distribution as profits is but little greater than before the war. The intervening years, 1914-1922, made a much poorer showing.



Big Franklin Refining Plant and Coke Ovens

Franklin Byproduct Plant Makes Ammonia, Motor and Pure Benzol, Toluol, Xylol and Solvent Naphtha

A Description of Those Features in the Franklin Plant Which Differ from Those Delineated in the Article on the Rosedale Refinery—Methods of Fractionating the Light Oil for Commerce

BY G. A. RICHARDSON*
Philadelphia, Pa.

AT THE Franklin plant the processes of refinement in regard to light oil go much further than at Rosedale. In fact the light oil obtained at the latter plant is sent to the Franklin plant for further treatment. In this article it will be my endeavor to pass lightly over those parts of the processes at Franklin that are similar to those at Rosedale and dwell on those having to do with the fractionating of the light oil and the making of ammonia liquor, referring briefly, however, to the more careful drying which the sulphate of ammonia receives at this plant to suit such markets as demand that the water content shall be below 0.15 per cent.

The Franklin plant is a combination of old and new construction. About 1916 the old byproduct equipment (where only a partial recovery of byproducts was effected) was torn out and a new byproduct plant constructed. The coke ovens at this place include one of the first blocks built in this country. This block was erected in 1895.

No change was made in the ovens, of which there are eleven batteries of various types, namely: Five Otto-Hoffman, two Koppers, three Cambria and one Belgian type, making a total of 492 ovens with a combined capacity of 4,500 gross tons per day. The capacity varies but is smaller than that of newer types of ovens. The coking time averages 24 hours. As at Rosedale the coal from mines located at the plant

is washed on tables of Campbell type and mixed with gas coal.

The present plant is a complete installation for the recovery of byproducts. It takes care of the entire gas output of the plant and consists of hydraulic-main circulating systems, gas washers and condensing equipment for the separation of tar and light oil from the gas, for the manufacture of sulphate of ammonia and for the obtaining of pure benzol, toluol, xylol and solvent naphtha, a boiler house and all auxiliary equipment, including ample storage capacity. This equipment is listed in detail in Table I.

The construction difficulties encountered at Rosedale



PANORAMA OF PLANT TAKEN FROM SPRAY POND

In foreground is a 40,000-cu.ft. gas holder. The tall towers on the left and beyond the concrete road are the scrubbers where the benzol is collected, and to the right of them are the low secondary coolers. The primary coolers are to the right of these, and still further to the right is the office and laboratory. In the rear may be seen the steel works and two blast furnaces, half hidden by the smoke from the ovens.

NOTE—This is the sixth and last of a series of articles on the mines, ovens and byproduct refineries of the Cambria Steel Co. Earlier articles appeared Aug. 31 and Sept. 7, 1922; Feb. 15, July 19 and Aug. 9, 1923.

*Midvale Steel & Ordnance Co. and Cambria Steel Co. Since this article was received these two companies have merged with the Bethlehem Steel Co.

TABLE I—BYPRODUCT AND BENZOL EQUIPMENT AT FRANKLIN PLANT

Byproduct Equipment		
Primary coolers	Ammonia stills	Decanters
Exhausters	Final coolers	Collector tanks
Gas boosters	Absorbers	Banks of cooling coils (2 sets)
Tar extractors	Gas holder	Dehydrators
Acid separators	Light-oil stills	
Saturators	Ammonia condenser	
Benzol Equipment, etc.		
Absorbers	Acid washers	Spray pond
Wash-oil cooler coils	Acid storage tanks	Spray-pond collector tank
Wash-oil collector tanks	Acid monte-jus	Light-oil storage tanks
Decanters	Acid receiver	Washed light-oil tanks
Preheaters	Acid feed tank	Residue tank
Light-oil stills	Caustic dissolvers	Benzol test tank
Vent scrubbers	Caustic feed tank	Toluol test tank
Pure-benzol condensers	Caustic receiver	Refined light-oil tanks
Pure-benzol receivers	Caustic monte-jus	Benzol free-oil tank
Pure-toluol still	Sludge disposal tank	Toluol free-oil tank
Pure-toluol condenser	Refined light-oil stills	First-runnings tank
Pure-toluol receivers	Refined light-oil condensers	Pure-benzol tanks
Solvent-naphtha still	Refined light-oil separators	Refined 90-per cent benzol tank
Solvent-naphtha condenser	Refined light-oil receivers	Motor-benzol tanks
Light-oil condensers	Pure-benzol stills	Pure-toluol tank
Light-oil separators	Solvent-naphtha separator	Solvent naphtha tanks
Light-oil receivers	Solvent naphtha receivers	

were absent at Franklin, the only problems arising being those that might be expected to occur when endeavoring to modify existing equipment in a plant which is being kept steadily in operation.

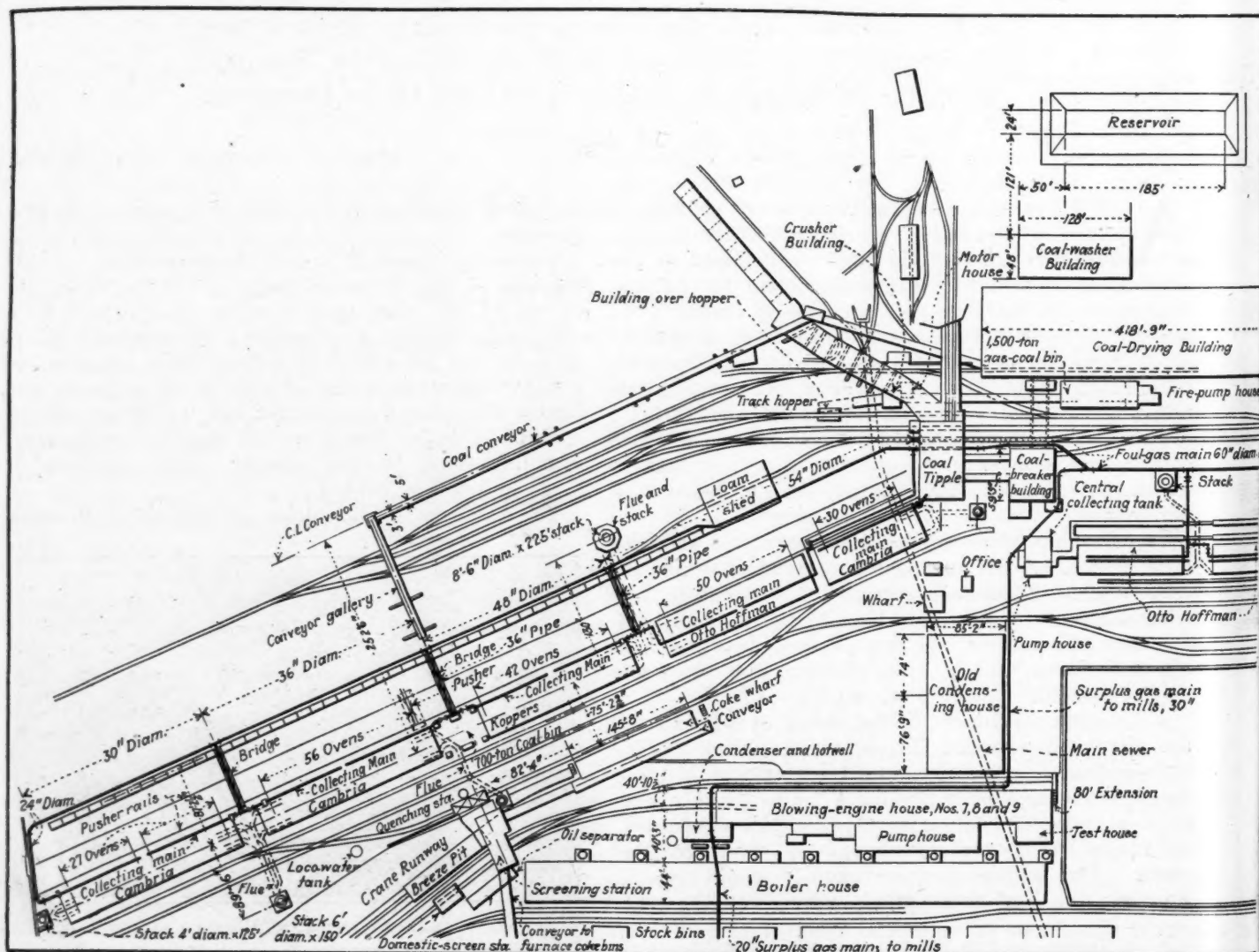
The gas from the ovens is taken off through two foul-gas mains which unite to form one 60-in. main at the three primary coolers. These coolers are somewhat

larger than those at Rosedale, but of the same type. Each cooler is 16 ft. in diameter, 45 ft. high, and has a capacity of 60,000,000 cu.ft. of gas per day. The cooling liquor is circulated through 160 banks of cooling coils, each 30 pipes high.

From the primary coolers the gas goes into the byproduct building, a steel and brick structure 360 ft. long by 83 ft. wide. Here are four turbo-exhausters, each having a capacity of 14,000 cu.ft. of gas per minute. From these the gas proceeds through (1) P. & A. tar extractors, of which there are five, and (2) Semet-Solvay saturators, of which there are an equal number. These latter take the ammonia from the gas by passing the latter through sulphuric acid, thus manufacturing sulphate of ammonia.

COOLERS AND ABSORBERS ARRANGED IN SERIES

The final coolers, which remove the naphthalene, and the absorbers or scrubbers, the function of which is to remove the light oil, are each arranged in two sets of three in series. The water from the final coolers is pumped to a spray pond for cooling and is circulated again. A small quantity of naphthalene is washed out at the final coolers, but owing to the efficient operation of the plant the yield is too small to warrant recovering it and it is wasted. The coolers are all 13 ft. in



The coal tippie shown near the center of the illustration is that of the Franklin mine. This slope has been operated for many years, and the plant for preparing the coal for use in the ovens also is by no means

new. The coal-drying building and the washer are quite similar in detail to like buildings at Rosedale; Bradford breakers, Campbell washers and large drainage pit with excavators being in use at both places.

Some of the buildings in the right foreground are parts of the steel mill, namely the blowing-engine house and the boiler house, neither of these having any part in the coke ovens or refinery. In like man-

PLAN OF THE FRANKLIN BYPRODUCT OVENS AND

diameter and 45 ft. high. The scrubbers, or absorbers, are of the same diameter as the final coolers but their height is 90 ft.

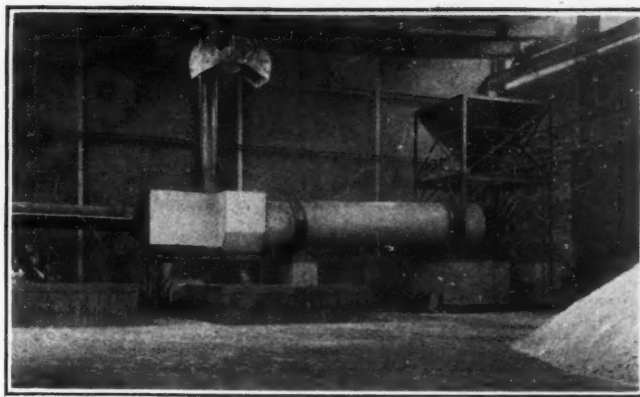
On leaving the scrubbers the fuel gas passes through a 42-in. main to the boilers to take care of Sunday gas requirements and a 30-in. main delivers the surplus to two turbine boosters and thence to the steel plant.

The ovens at Franklin are not of the regenerative type, and as a result the gas yield is smaller than at Rosedale. At full operation about 28,000,000 cu.ft. of surplus gas is released, which will replace approximately 570 tons of coal or 120,000 gal. of fuel oil or 15,000,000 cu.ft. of natural gas or 120,000,000 cu.ft. of producer gas. From these figures and those given for the Rosedale plant it will be seen that the savings in fuel consumption alone by installations of this character are a considerable item.

TABLE II—RECENT AVERAGE YIELD PER NET TON OF COAL CHARGED

Coke.....	70 per cent	Concentrated liquor..	1 gallon
Gas.....	10,500 cu.ft.	Ammonia sulphate.....	24 lb.
Weak liquor.....	30 gallons	Light oil.....	3 gallons
Tar.....	7 gallons	Motor benzol.....	2.4 gallons

These figures will vary, of course, with the mixtures charged in the ovens. The Semet-Solvay Co. estimates that the byproducts when the Franklin plant is running at full capacity are as follows: Tar, 40,000 gal.; sul-

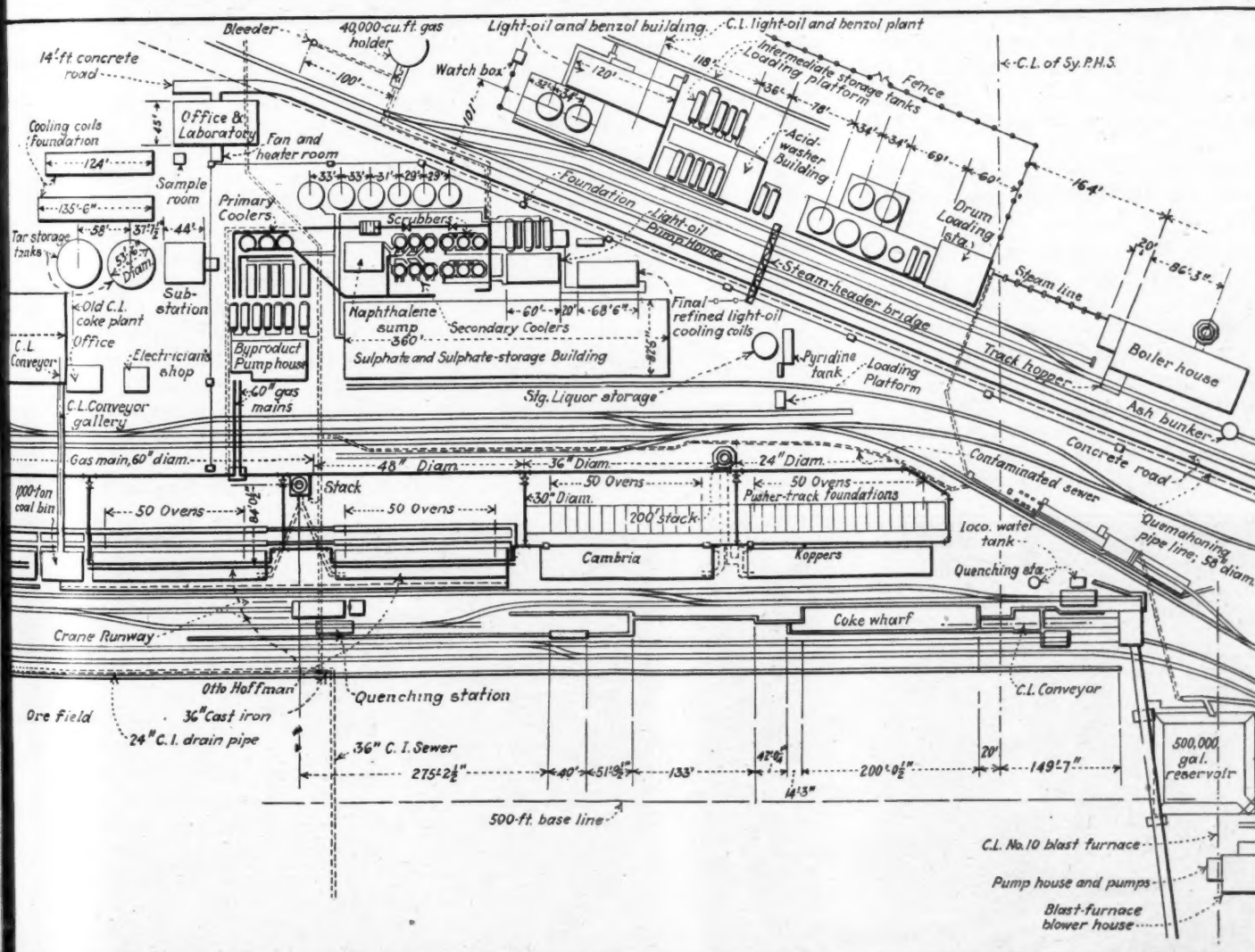


DRYING AMMONIUM SULPHATE IN ROTARY KILN

This kiln is air heated. Some industries require their sulphate of ammonia very dry, and this kiln brings the moisture below 0.15 per cent, which is the specified limit.

phate of ammonia, 126,000 lb.; light oil, 15,000 gallons.

As a rule ammonia is recovered at Franklin as ammonia sulphate. The salt precipitated in the saturators is taken to the centrifugal driers, of which there are ten. After drying it is delivered by a belt conveyor into the storage room, which will hold 5,000 tons and which measures 83x160 ft. A rotary air-heated drying kiln also is provided. Some consumers demand a very dry sulphate in which the moisture content is reduced

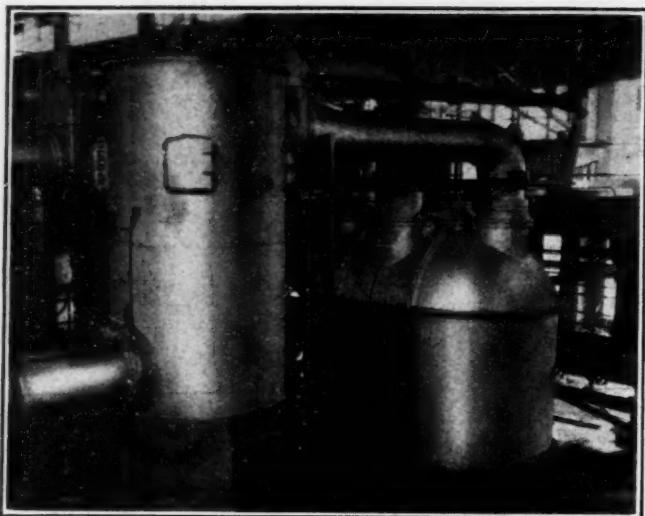


REFINING PLANT, CAMBRIA STEEL CO., JOHNSTOWN, PA.

ner the large ore field on the right marks the edge of the steel plant and the beginning of the plant which deals with the coal and its byproducts. This plant as it existed in June, 1912, was described in *Coal*

Age by R. Dawson Hall in the issue of July 20 of that year, pages 72-77. At that time nothing but Otto-Hoffman ovens were to be found at the plant. At the far side of the concrete road can be seen the light-

oil refining plant which purifies the light oil to motor benzol or goes further and breaks it up to form benzol, toluol, xylol and solvent naphtha. The latter benzol is the pure product.



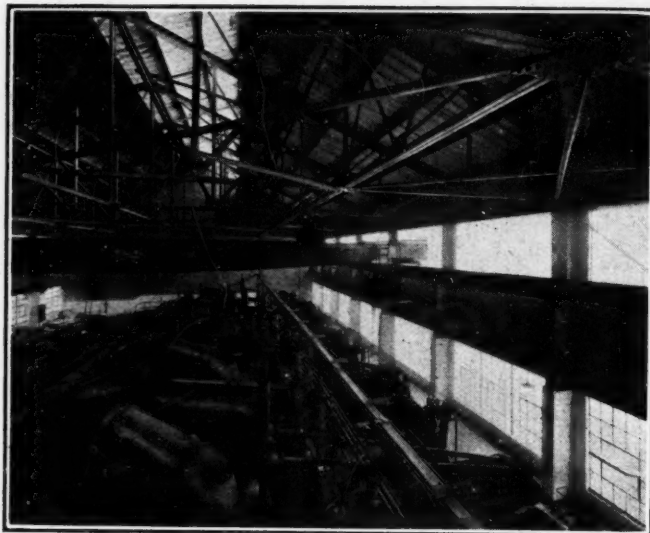
TAR SEPARATOR AND SATURATOR AT FRANKLIN

The gas, in which the ammonia is contained, passes through a screen and impinges on flat surfaces in the tar extractor or separator. Thus the tar is mechanically taken from the gas and falls to the bottom, where it is piped to the tar decanters. The gas, purified of tar, goes to the saturator, where it bubbles through a 5-per cent solution of sulphuric acid, forming ammonium sulphate.

to less than 0.15 per cent and the acid content to an equally low figure. In order to meet this requirement the drier is provided. As at Rosedale, the sulphate is either shipped in bulk or bagged.

If desired the two ammonia stills provided to free the fixed ammonia and return it to the gas for absorption as sulphate can be used to make crude concentrated ammonia liquor, a condenser having been provided for that purpose.

Flexibility of operation is claimed by the manufacturers for the ammonia-recovery system. When sulphate is in demand, only a minimum quantity of ammonia liquor requiring distillation is produced. If, on the other hand, concentrated liquor is needed, the circulation systems easily can be reversed and, by adding small quantities of water, a large proportion of the total ammonia in the gas, whether free or fixed, can be recovered in the form of liquor. The quantity recoverable in this way will vary from 15 per cent to 85 per cent of the total, according to the coal used. The main essential in making this possible is that the stills have ample capacity, and the manufacturer asserts



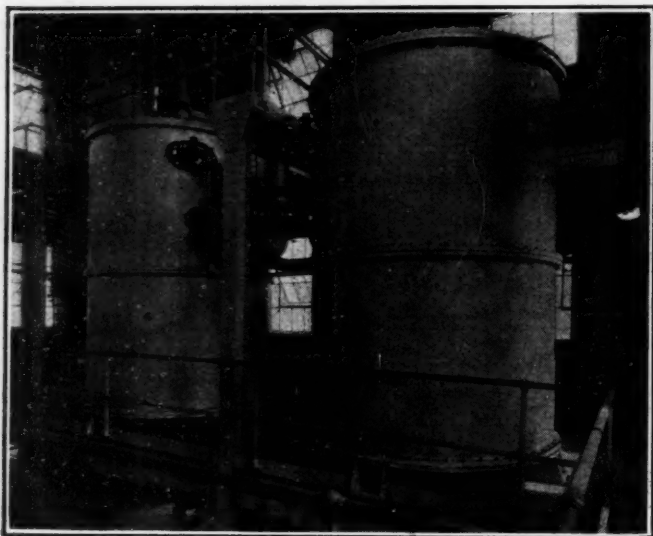
INTERIOR OF SULPHATE BUILDING

The tar extractors are on the left and the saturators are under the eels where the big take-off pipes bend down. On the gallery floor are a line of centrifugals by which the sulphate is dried. If specially dry sulphate is desired an additional drying in a rotary kiln follows.

that the particular stills installed have a capacity four times greater than that of any other type of the same size.

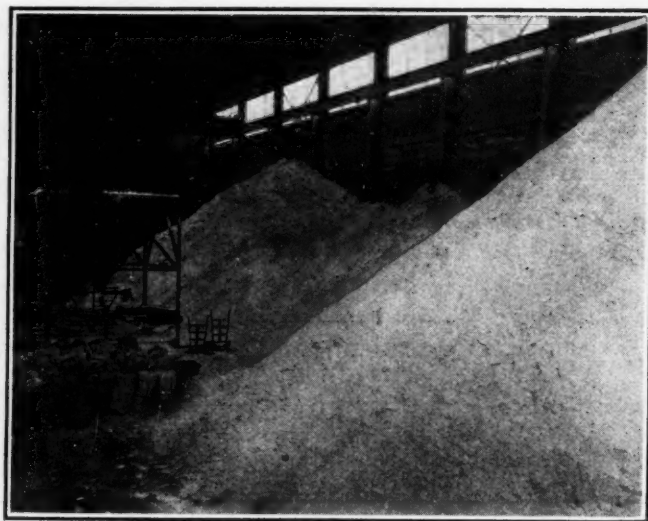
Stripping stills, similar to those at Rosedale, are provided for the recovery of the light oil, together with the usual preheaters, heat exchangers, decanters, etc. From the stills the crude light oil goes into storage tanks. All storage tanks are vented into columns in front of the stills.

The first stage in the treatment of the crude light oil consists in washing it with sulphuric acid. The oil comes in at the top of the washer and is agitated by paddles which are driven by vertical steam engines. The acid also flows in at the top from a gravity feed tank, being forced up to that tank from storage by air pressure in an apparatus known as an acid monte-jus. For this washing 66 deg. sulphuric acid is used, and the quantity is determined by a color test on the oil after treatment. The general practice is to gage the work by No. 6 Barrett color. This acid wash takes out the olefines, and the sludge resulting, which is of no commercial value, is drained and sent to the slag dump.



TANKS IN WHICH SULPHURIC ACID IS STORED

Sulphuric acid is used for the manufacture of sulphate and for the purification of the light oil in the manufacture of benzol and its homologues.



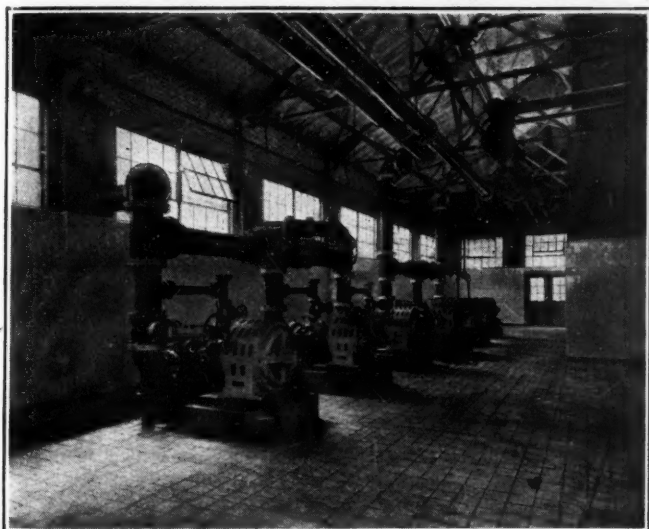
BUILDING IN WHICH SULPHATE OF AMMONIA IS STORED

About 25 lb. of ammonium sulphate is made per ton of coal, or 1.25 per cent of the coal weight.

After the removal of the sludge, the oil is neutralized with caustic soda, which is blown over from the caustic tanks with the aid of a caustic-soda monte-jus. In preparing the caustic, holes are cut in the ends of the drums, which are then dropped into the water in the caustic tank. The sludge resulting from the neutralization of the oil is drained off into a tank and from that point goes to the quencher sewer.

The oil is agitated continuously while the acid is being introduced and is then still further agitated for a period of one hour. After this it is allowed to settle for one hour before draining the sludge and treating with caustic.

The neutral oil is run into the washed light-oil storage tank, and it is pumped thence into the refined light-oil still kettle. Steam injected at the bottom through fractionating coils vaporizes the oil. The vapors then go to the refined light-oil column, where they are still further refined, and lastly they are condensed in the refined light-oil condenser. Some of the water which also condenses in the process is separated out, and the refined light oil is pumped to the refined light-oil receiver. If no further refining is done the liquid is collected in the motor-benzol storage tank and sold as motor benzol.



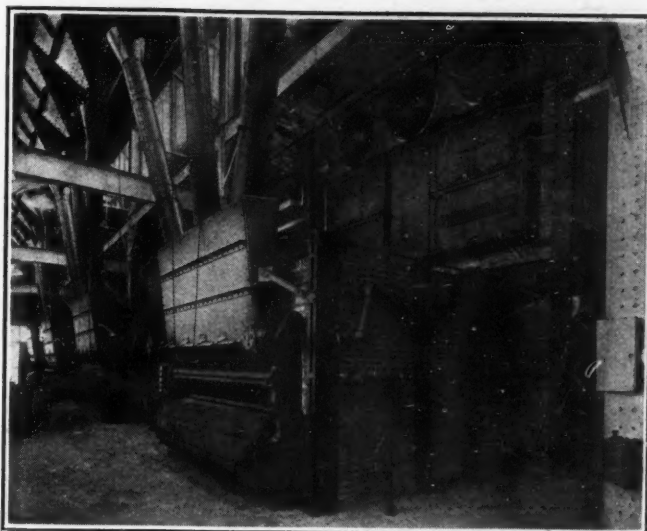
ONE OF THE PUMP INSTALLATIONS AT FRANKLIN

Every part of the plant is as fireproof as tile, concrete, steel and glass can make it, as easy to keep clean as ingenuity can devise, well lighted and orderly.

When a product of greater purity is required further fractionation is necessary. Oil from the refined light-oil tank is pumped to the pure-benzol-still kettle. Closed steam is injected to raise the temperature of the light oil to 80.2 deg. C., which is the true boiling point of pure benzol. The benzol vaporizes, and the toluol, xylol and solvent naphtha are run off from the bottom of the kettle and collected in the benzol-free-oil tank. This is further refined into toluol, etc.

The vapors from the pure-benzol-still kettle are sent to the pure-benzol fractionating column and any toluol and naphtha that may be carried mechanically forward in the vapor are condensed and flow back into pure-benzol-still kettle. The vapor passes out of the fractionating column through a dephlegmator which is in the form of a multi-tubular vessel.

The vapor circulates through the tubes while water passes around the outside of them. By regulating the flow of the water a partial condensation of the vapors is effected and only the most volatile compounds pass



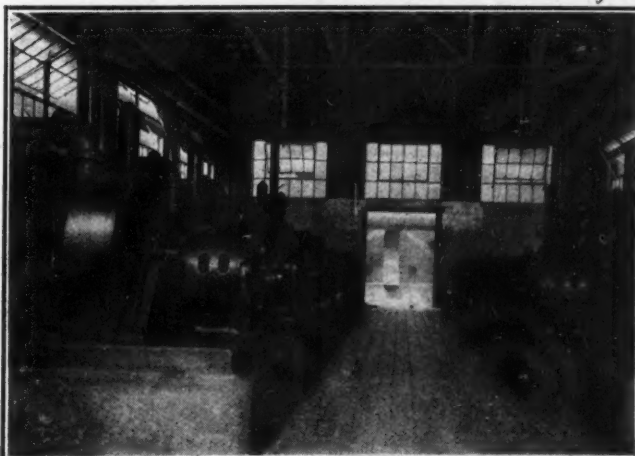
BATTERY OF WATER-TUBE BOILERS

The Franklin coke ovens and refinery have their own boiler plant, containing five 768-hp. water-tube boilers, each equipped with chain-grate stokers burning coke breeze from the ovens.

off. These are condensed in the pure-benzol condenser, from which the resulting liquid flows to the pure-benzol receiver, where it is analyzed to determine its purity.

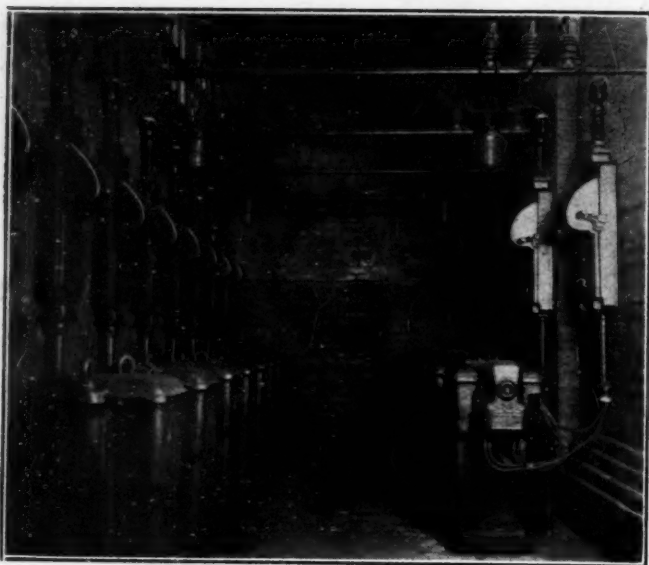
The "first runnings" of the benzol are collected in the "first-runnings" tank and are isolated in order to reduce the proportion of carbon disulphide in the "blown-over" benzol. These are then returned to the washed light-oil tank. The temperature of the still is allowed to rise, and the product that comes off contains a large proportion of benzene. This goes to the benzol test tank. Tests are made on this as a check on the analysis made at the receiver, and if it meets the specifications it is either sent to the pure-benzol storage or to the refined 90-per-cent benzol storage tank, depending on whether chemically pure (C.P.) or 90-per-cent benzol is being made.

Toluol is the product of a second distillation at a higher temperature. The contents of the benzol-free-oil still are pumped to the pure-toluol-still kettle, where closed steam is used to raise the temperature to about 110 deg. C., at which point the toluol vaporizes. Any xylol and naphthas settle to the bottom of the kettle and are taken to the toluol-free-oil tank. The toluol vapors pass into the pure-toluol fractionating column. Here any xylol or naphthas carried forward are condensed and flow back into the kettle. The remainder of the vapor



LIGHT-OIL PUMPROOM

This installation is adjacent to the scrubbers. It pumps the light oil across the railroad tracks to the light-oil refinery, where it is subjected to the final refinement. Note how carefully all dangerous machinery is guarded.



CONTROL EQUIPMENT, LIGHT-OIL PUMPROOM

The transformers and controls are fully inclosed and placed in a brick room which forms part of the light-oil pump building but is separated by an unbroken brick wall, entrance being obtained from the outside of the building.

passes as through a dephlegmator of the same type as that used with the benzol, and then into the pure-toluol condenser, where it is cooled and condensed with water. Thence it goes to the pure-toluol receiver, where a test is taken for chemical analysis. Then it drains by gravity into the toluol test tank, where another test is made as a check on the first. If it meets the specifications it is pumped to the pure-toluol storage tank.

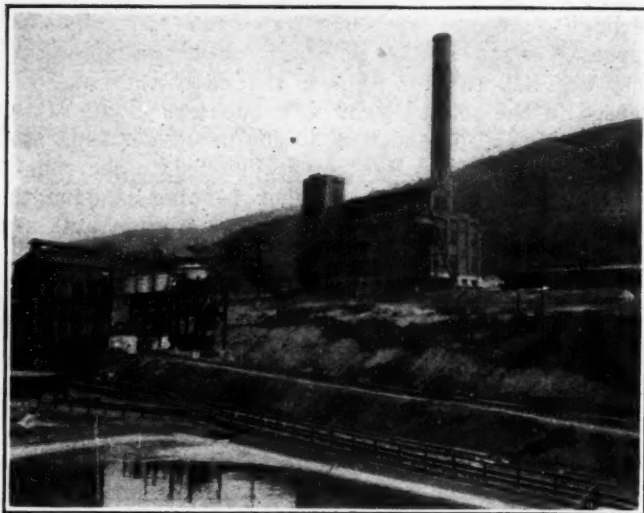
The product in the toluol-free-oil tank requires a little more handling than the products previously obtained. It is pumped into the solvent-naphtha-still kettle, where the naphtha fraction is driven off. The temperature of the closed steam is not high enough, and open steam is admitted to assist in the expulsion of the naphthas by mechanical means. The vapors are condensed in the solvent-naphtha condenser and then go to the solvent-naphtha separator by gravity. Any water present is separated and then the naphtha goes to the solvent-naphtha receiver. After a chemical analysis has been made and it is found that the naphtha meets the requirements it is admitted to the solvent-naphtha storage tank.

If xylol is desired, the liquid which comes from the toluol-free-oil tank is subjected to a much more careful refining process.

This briefly outlines the uses of the equipment which has already been listed. It is intended as a general and not as a detailed technical description. Its purpose is to give those not familiar with byproduct-plant operation some idea of the equipment and what actually takes place in it.

The auxiliary equipment of the Franklin plant embraces some interesting features. Foremost among these, perhaps, is the pneumatic-tube system which has been installed to expedite the sending of samples to the laboratory.

As at Rosedale, the plant has its own power house,

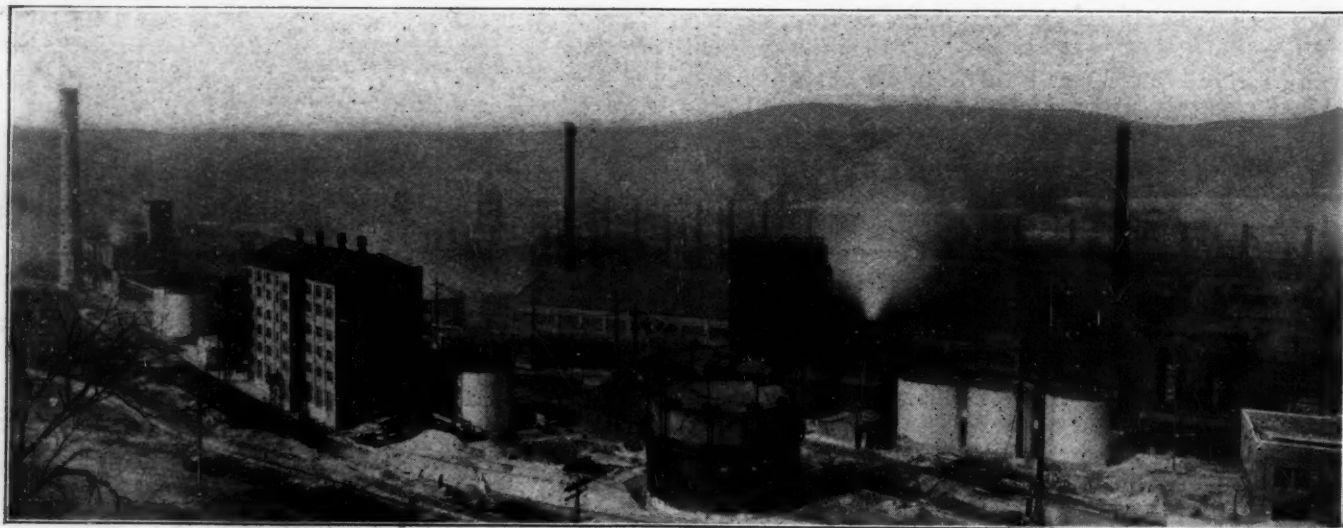


POWER HOUSE FROM BLAST FURNACES

In the foreground is a reservoir holding 500,000 gallons of water and on the left the conveyor which delivers the metallurgical coke, made in six of the blocks of ovens, to the stock bins for use in certain of the blast furnaces.

which is equipped in the most modern manner. It is, however, considerably larger than the Rosedale plant. It contains five 768-hp. water-tube boilers, each equipped with chain-grate stokers for burning breeze. The boiler efficiency obtained with breeze compares very favorably with that obtained with coal.

Motor-generator equipment and three 500-kva. transformers housed in an independent transformer building



VIEW OF THE VALLEY TAKEN FROM THE HILL ABOVE THE LIGHT-OIL REFINERY

On the extreme left is the boiler house. To the right of this is the acid washer building and the big gas holder. Back of the latter are the scrubbers and the large sulphate storage and sulphate building. To the right of the scrubbers are the secondary coolers. To the right of the tall stack are the primary coolers and in the right foreground the office and laboratory, which at the time when the photograph was taken for this cut was still under construction.

take care of all current requirements. The pumps are located in two separate pumphouses.

One feature that strikes the visitor is the neat appearance of all the buildings both at Rosedale and Franklin. Scrupulous cleanliness is a necessity, and a liberal use of white tiling on the side walls aids in brightening the surroundings and in enhancing the neat appearance.

The electrical equipment is of the latest type and some of the installations are models of their kind. Particular attention is called to the illustration showing the transformer and control installation at the light-oil pumping station. Everything is fully inclosed and located in a brick room which forms part of, but is separated by a wall from, the pumproom, the only entrance being through a door from the outside.

All in all the Rosedale and Franklin byproduct plants form two installations which not only are of the most modern type to be found in this country but are among the finest. A high degree of efficiency in operation is being obtained and it is interesting to note that original estimates as to production are being exceeded.

Combustion and Mechanical Engineers Study Pulverized Fuel for Boilers

THE interest taken by a gathering of 175 combustion and mechanical engineers, in Pittsburgh on June 5, in a paper on "Pulverized Fuel for Boilers," which was delivered before a joint meeting of the mechanical section of the Engineers' Society of Western Pennsylvania and the Pittsburgh section of the American Society of Mechanical Engineers, attests the importance that engineers of this country attach to this new problem.

The discussion which followed the reading of the paper would lead one to believe that pulverization offers possibilities as a means of obtaining higher combustion efficiencies of coal, but that pulverized combustion adds difficulties to the problems of designing furnaces to withstand the higher temperatures that accompany the increased efficiency. It was generally agreed by those who participated in the discussion that the belief so firmly established as recently as five years ago that the furnace wall should be as thoroughly insulated as possible to retain the heat in the furnace no longer exists. Though pulverization does not insure complete combustion of coal it gives greater combustion efficiency than stoker feeding and simplifies control.

By way of introduction to the paper, which was prepared by J. C. Hobbs and L. W. Heller, it was pointed out that the Middle West has been most active in investigating and adopting pulverized coal for steam-producing purposes. The enormous tonnage of steam coal burned yearly justifies investigation of this problem on a large scale as a means to reduce the cost of producing energy.

Facts upon which the paper was based were obtained in a test conducted by the Duquesne Light Co. in its Colfax station. In the burning of nearly 10,000 tons of pulverized coal in an 850-hp. Stirling boiler an over-all efficiency of 84 per cent was obtained, while the heat derived amounted to 30,000 B.t.u. per cubic ft. of furnace space per hour. The coal was ground so that 65 per cent of it passed through a 200-mesh screen.

Little was said about the obstacles encountered in the test. It was asserted that the cost of good refractories to withstand high temperatures is prohibitive. The dis-

cussion marked this statement as unsound by reason of the need of better furnace design to check the rise of temperature in the furnace walls above the temperature of failure of the refractories used. This, it was pointed out, can be accomplished by passing air to the combustion chamber through hollow furnace walls or by water tubes in the wall or a screen in the furnace, the latter method being preferred.

Dr. Kreisinger, formerly combustion engineer for the U. S. Bureau of Mines, opened the discussion by stating that powdered coal gives higher efficiencies and permits higher capacities than coal in any other form. High efficiencies can be maintained under conditions of variable load and losses through banking are small, which is not the case with the stoker-fed fire. Only a few minutes are required to bring the boiler up to rating. The success in the use of pulverized coal, he affirmed, is due to almost complete combustion with little excess air. In other methods combustion losses may be 5 to 10 per cent, while with powdered coal they seldom exceed 1 to 2 per cent, and little excess air means smaller stack losses. In the burning of pulverized coal the excess air consistently may be held at 10 to 25 per cent as against 100 per cent or more when lump coal is burned.

The endurance of furnace linings, which is important to insure continuous operation, can be obtained by proper design as well as by the use of high-grade refractories. If this factor is overlooked the lining may be burned away in a short time. Molten ash usually runs to the bottom if it is not frozen by means of a screen of water tubes placed close to the walls; otherwise the furnace must be cooled and the slag punched out periodically.

Dr. Kreisinger was not in accord with a statement made in the paper that air-cooled walls should be inclined away from the furnace. His belief is that they should be vertical and that they will stand if of sufficient strength. To give the necessary strength and to hold the fire bricks in place recourse may be had to a steel casing on the outside, which should be utilized solely to retain the heat in the furnace and to resist abrasion by molten ash.

Mr. Crolis deplored the practice of charging the cost of furnace repairs and maintenance as an "experimental" item. Some of these at least should be charged to the generation of steam. He further added that the problem is one of economy as well as efficiency, and among other things, that it is not a practice in economy to crush the bulk of the coal to 200 mesh when 100 mesh will give equal efficiency. He said that nobody yet has designed a furnace which will long withstand the high temperatures of present-day practice.

It was suggested by Mr. Romb that the amount of air admitted with the coal can be increased by reducing the rate of feeding the coal.

That the results obtained with the use of pulverized coal have caused the manufacturers of stokers to develop the super stoker was intimated by J. B. Gregg. The capacity of the furnace per foot of width is now about three times that formerly obtained.

The burning of pulverized coal is increasing, according to Mr. Breslove, consulting combustion engineer of Pittsburgh, Pa. Ease of operation is one of the salient features which recommends it. He told of a small installation in Pittsburgh where a higher efficiency is being obtained in a 500-hp. boiler than is general where stokers are intelligently operated. The boiler is attended by a man who is no expert.

New Equipment

Traction Wheel Mounting for Railroad Type Steam Shovels Saves Time and Expense

TRACTION wheel mountings for heavy railroad type steam shovels, recently built, have successfully withstood tests on a machine of this type having a capacity of 6 cu.yd. Heretofore such machines have been mounted only upon standard railroad trucks, but on account of the necessity for laying track for moving the shovels much time was consumed in getting from one point to another. This size shovel is much used in large rock quarries and open mines and when blasting operations were in progress it usually was necessary to lay track and move



RAILWAY TYPE SHOVEL MOUNTED ON LARGE TRACTION WHEELS

The flexibility and ease of locomotion are important factors in the arrangement of this shovel. Limiting the location of a shovel to places where there are rails frequently results in great losses of time and money.

the shovel back from the face of the excavation and then up again after the explosives had been set off. These operations were not only costly in time and labor consumed in making the changes, but also in decreased output through time lost, and steps were taken to overcome the difficulty.

Traction wheels measuring 6 ft. in diameter and with a face of 36 in. on the front or drive wheels and 30 in. on the rear wheels were designed. The front wheels are used as drivers and power is delivered through a series of gears from the powerful hoisting engines on the shovel. Steering is accomplished by turning the rear wheels by means of a screw shaft and traveling nut. The nut, to which is attached the axle tongue, moves along the screw shaft, slewing the rear axle and wheels in the direction desired. The screw shaft is operated by a separate reversible steering engine mounted above deck alongside the boiler—out of the way yet readily accessible. Reversing the engine causes the traveling nut to move in the opposite direction. The engine is controlled and steering accomplished by means of a single lever from the engineer's position in the forward end of the cab.

Briefly summarized, the advantage of traction wheels over railroad trucks for large railroad type steam shovels are as follows: Greater mobility of machine, elimination of pit crew, easier accessibility to face of excavation, elimination of tracks and reduction of side strains and racking to the machine in general. Traction

wheels also have a marked advantage over any other type of mounting in that the traction wheels are much less complicated, simpler to operate and have a much lower upkeep cost.

The shovel has an over-all length of slightly more than 85 ft. and the over-all width is 20 ft. with a maximum height over the cab of 15 ft., while the boom extends to a height of 32 ft.

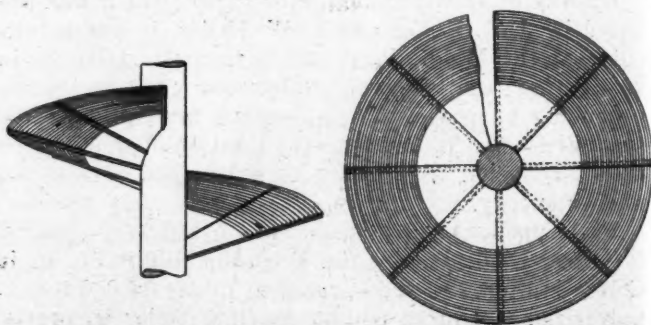
An interesting feat accomplished by one shovel recently was in a pit about 80 ft. deep and reached by a steep incline. To get the new machine into the pit ordinarily would be quite a problem, but when equipped with traction wheels the problem was much simplified. With boom up and dipper and handle in place the shovel was backed down the steep declivity under its own power without difficulty.

Soon after this shovel had been placed in operation a train of loaded dump cars was derailed when some distance from the shovel and on the way to the incline hoist. The shovel was thrown into gear, run down to the cars, a chain hooked over the dipper teeth and around the cars. In a few minutes the train was re-railed and on its way to the hoist while the shovel went back to the face ready for work. Under the old conditions it would have been necessary to unload the cars to rerail them by hand, and then reload them. While this was being done the shovel and other cars would have been standing idle if the ready mobility of the shovel had not saved the day. The shovel also has been used for handling boilers and other heavy machinery that would require the services of a locomotive crane.

Traction mountings on the 1½-cu.yd. shovel have been standard equipment for some time and their successful use led to experiments which have developed the traction wheels for all sizes of railroad type steam shovels. The traction mountings and shovel are manufactured by the Osgood Co., Marion, Ohio.

Roughening the Thread of the Coal Spiral

"IT IS KNOWN to those skilled in the art of coal cleaning," says Frank Pardee, of Hazleton, Pa., in applying for a patent on a new spiral separator, "that coal from one bed often requires different treatment from that given to coal from other beds, and it is apparent that by utilizing one or a combination of several types of corrugated jackets I can readily adapt the separator for handling materials of widely differing natural characteristics." The corrugation may be made over the whole thread or only a part, it may



MODIFYING SPIRAL SURFACE TO SUIT COAL

Here the spiral corrugations are concentric but it is not certain that this will be the best kind of roughness to adopt.

be directed in any one of several directions, may be curved or straight to suit the peculiar needs of any particular kind of coal. By testing the various spirals, that particular one may be chosen which has the right pitch and the correct type of roughness.

How Revolving Field Is Produced in Induction Motor

Explanation of the Varying Current in a Single-Phase Circuit—Combining of Phases—Grouping of Phases to Produce Magnetic Field—Visualizing the Rotating Field

BY O. E. KENWORTHY

Electrical Engineer with Lehigh Valley Coal Co., Wilkes-Barre, Pa.

THE revolving field of a polyphase alternating-current motor always has been considered more or less of a mystery. As a matter of fact it can readily be understood by one having only a slight knowledge of the fundamentals of alternating-current and motor-winding diagrams.

One of these fundamental concepts is that in a single-phase alternating-current 60-cycle circuit the current will flow in one direction through a given conductor, starting from a zero value, building up to a maximum, dying down to zero again; then completely reverse itself in direction and build up to maximum and die down to zero. This operation completes a cycle of which there are sixty in one second. This variation of the current value and direction in the conductor may be visualized by means of what is known as a sine curve, shown in Fig. 1.

The line A, always designating the vertical distance from the zero line to the curve as it moves from left to right, represents the different values of the current in the circuit at any instant during a cycle. A three-phase circuit is made up of three single phases with the instantaneous current values timed so that the currents in each phase reaches its maximum value in a given direction one-third of a cycle apart from one another. Fig. 2 will show this. Phase A is maximum at the instant of time marked X-X' while phases B and C are one-half their maximum value at the same instant. At the point marked 120 deg. phase B is maximum and A and C are one-half their maximum value. At the point marked 240 deg. phase C is maximum while A and B are one-half maximum value.

Looking at Fig. 2 again it can be seen that a full cycle has been completed for all three phases when phase A has progressed from the point marked zero to the point marked 360 deg. This may show that a cycle can be divided into 360 deg. and that in a three-phase circuit the phases are 120 deg. apart.

Again the three phases of a three-phase circuit may be interconnected in several different ways within a motor. Two of the most important connections are called the delta connection, and the wye connection. Fig. 3 is called a delta because of its resemblance to the Greek letter D or Δ . Fig. 4 is called a wye connection because of its resemblance to the letter Y.

In order to visualize the revolving field of a three-phase motor we will consider a stator winding diagram of a three-phase motor (see Fig. 5). This particular winding diagram applies to a motor having 120 slots and 120 coils. The diagram is for a ten-pole motor so

that there are twelve coils per pole, or four coils per phase per pole. Or again there are four coils per group, three groups per pole and thirty groups in all. The coils are made up of one turn each and the four coils in each group are connected in series. One can now easily see that there are ten groups connected in series for each phase. The winding is termed a "series delta."

In order to simplify the winding and make it easier to follow we will draw in the line X, Fig. 5, and considering that part of the winding above X we can construct Fig. 6 by combining the coil

groups. This is a method used by a prominent manufacturing company to represent windings. Now we can see each group and its relation to all the other groups of the complete winding.

If we consider that each group can set up a magnetic flux by itself in a given direction at a given instant there will be a series of alternate north and south poles around the stator. For instance, refer to Fig. 7 and Fig. 2; Fig. 7 represents the groups, 2, 1, 30, 29, 28, 27 taken from Fig. 6. At the instant marked zero on Fig. 2, phase A is maximum, groups 1 and 28 are in phase A; phase B is one-half maximum, groups 2 and 29 are in phase B; phase C is one-half maximum and groups 30 and 27 are in phase C. Curve 1 of Fig. 7 shows the magnetic field thus set up by these groups; for convenience it is shown as a sine curve. It is easily seen that groups 2, 1 and 30 and groups 29, 28 and 27 make up two poles as shown on Fig. 6. Considering again curve 1, Fig. 7, we can assume that groups 2, 1 and 30 form a south pole while groups 29, 28 and 27 make a north pole, the maximum strength of the south pole being centered under group 28. If the reader will now follow around the winding he will see that a sine curve can be traversed around the winding showing five south poles and five north poles. (See curve 1 of Fig. 6.)

So far we have shown that at a given instant marked zero on Fig. 2 the winding produces a series of alternate north and south poles, different polarities appearing on the opposite sides of the zero line. Now if we refer again to Figs. 2 and 7 and consider the point on Fig. 2

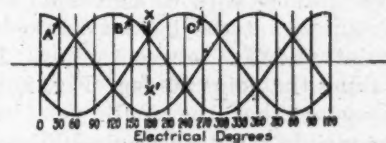


FIG. 2—THREE-PHASE CURRENTS
In the combination of single-phase currents to produce a three-phase system each phase must be 120 electrical degrees apart. Each current wave must start a definite interval after that preceding.

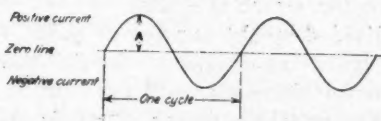


FIG. 1—ALTERNATING-CURRENT VALUES

The amount and direction of the current at any given instant is the vertical distance, as A, measured between the zero line and the current line.

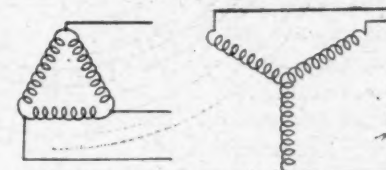


Fig. 3

Fig. 4

FIGS. 3 AND 4—DELTA AND WYE CONNECTIONS

These are the two common methods of combining windings for a three-phase circuit.

marked 30 deg. and curve 2 of Fig. 7 we see that the current in phase A, or groups 1 and 28, has dropped 0.866 of its maximum value, that the current in phase B, or groups 2 and 29, has dropped to zero and that current in phase C, or groups 30 and 27, has increased to 0.866 of its maximum value. Curve 2 of Fig. 7 is drawn to show this. From this curve we see that the south pole, which was formed with its maximum strength directly under group 1 at the instant zero Fig. 2, has moved to a position where its maximum strength is directly under a point midway between groups 1 and 30, and that the north pole, which was formed with its maximum strength directly under group 28, at the instant marked zero has moved to a point midway between groups 28 and 27. Similarly taking the point 60 deg., Fig. 2, we get curve 3, Fig. 7, showing that the south pole has moved so that its maximum strength is directly under group 30 and that the north pole has moved so that its maximum strength is directly under 27. Considering the rest of the points in Fig. 2 and the corresponding curves of Fig. 7 we can see that the magnetic field set up by the winding is actually revolving around the stator.

The speed of the revolving field, of course, is entirely dependent upon the number of poles for which the motor is wound. Referring to curve 7, Fig. 7, and point 180, Fig. 2, the pole set up under group 1 has changed completely from a maximum south pole to a maximum north pole. Fig. 2 shows that this change has occurred during one-half of a cycle. We can say

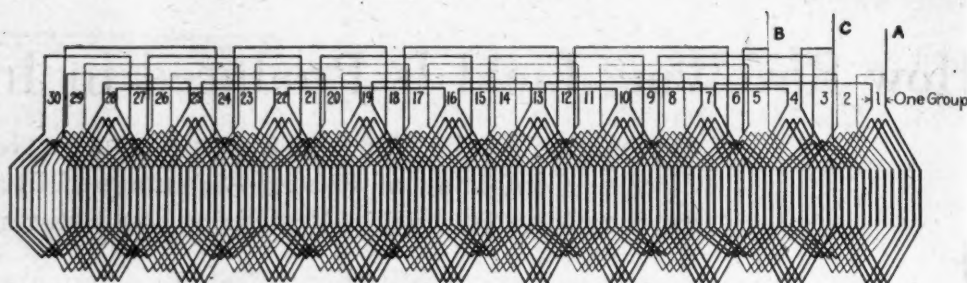


FIG. 5—COMPLETE WINDING DIAGRAM

This development drawing shows the three-phase circuits very distinctly throughout the whole winding. The complete circuit may be easily traced from one line wire to the other.

then that the field has revolved the distance of one pole pitch; that is, the distance from the center of one pole face to the center of the next pole face, in one-half cycle and twice the pole pitch in one cycle. Then for 60 cycles per second the field has revolved past 60×2 , or 120 poles, and in one minute the field has revolved past 7,200 poles. If the machine is wound then as per diagram Fig. 5, the speed of the winding is $7,200 \div 10$, or 720 r.p.m. This brings out a simple method of figuring the speed of the revolving field for any 60-cycle three-phase motor, which is 7,200

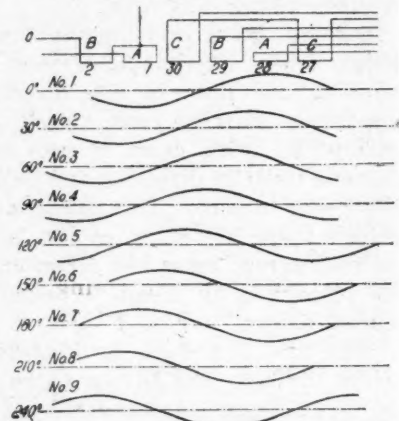


FIG. 7—SHIFTING OF THE POLES

As the electrical degrees indicated in Fig. 2 are passed the field poles progress as shown by the curves. Each field pole has a definite position, depending upon the amount and direction of the current in the stator winding.

divided by the number of poles. This speed is called the "synchronous speed," the full-load speed of an induction motor being about 95 per cent of the synchronous speed. An induction motor always runs at less than synchronous speed. The rotor must run slower than synchronous speed in order to operate.

Germany Imports Less Coal During May

Imports of bituminous coal into Germany in May, according to German official statistics, were as follows in metric tons:

Sarre.....	50
Great Britain.....	1,667,099
Czechoslovakia.....	84,867
Polish Upper Silesia.....	583,831
Other Countries.....	59,803
Total.....	2,395,650

How the importation of coal has grown since the commencement of the Ruhr occupation is shown in the following monthly tabulation as compared with the last three months of 1922, in metric tons:

	1922			1923
	October	November	December	January
Bituminous coal.....	2,146,226	1,799,965	1,471,559	1,870,127
Brown coal.....	127,972	54,685	81,045	86,829
Coke.....	43,650	48,019	18,987	27,107
Briquets { bituminous coal.....	5,942	11,973	7,098	2,871
brown coal.....	95	135	665	945
	1923			
	February	March	April	May
Bituminous coal.....	1,421,832	3,397,658	2,695,152	2,395,649
Brown coal.....	121,115	247,345	233,997	83,031
Coke.....	16,565	71,954	132,379	95,699
Briquets { bituminous coal.....	6,996	13,413	22,258	23,678
brown coal.....	7,099	12,800	3,240	1,784

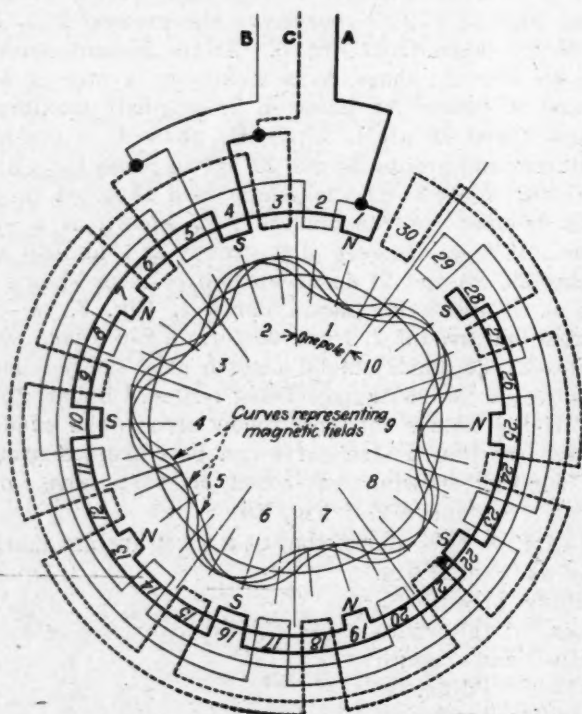


FIG. 6—STATOR WINDING AND FIELD POLES

The curves on the inside of the diagram are used to indicate the location and quality of the poles created by the current in the winding. That part of the curve wave which is on the outside of the circle is considered as being a south pole while that part of the curve on the inside of the circle represents a north pole. The three curve positions considered as existing in three successive instants of time visualize the shifting of the poles in a clockwise rotary motion.

Machine Bookkeeping Speeds Accounts at the Mine

Here Is a System of Sales Accounting Which Puts Correct Bills Out on Time and With so Little Labor That Two Clerks Can Serve a 4,000-Ton Coal Operation

BY JOHN C. MCNEIL
Certified Public Accountant, Louisville, Ky.

IT MIGHT safely be assumed that every coal operator in the country is interested in reducing the cost and increasing the accuracy and speed of his sales accounting at the mine. It is the purpose of this article to offer a plan by which any operator can do that very thing. Lessening lost time, getting bills into the mail always exactly at the end of the month, making disbursements well within the discount period, keeping accounts up to the minute, all have their cash value to a mining company, which can be realized through this improved bookkeeping method.

The usual method of accounting for coal sales at the mine is first of all to render to the railroad a bill of lading covering the coal shipped. After this is returned from the coal-billing station, an entry usually is made in the shipping book, charging the coal to the customer, the entry showing to whom the coal was shipped and what was the weight of the shipment. Extensions are then made, and a record is entered in the shipping book from these data. From this the invoice is prepared. Some concerns reverse the order, making the invoice first and then writing the data in the shipping or sales record. The sales ledger is then posted, either from the shipping book or from the duplicate invoice.

The postings to the sales ledgers are then proved and at the end of the month the sales ledger is balanced with the controlling account in the general ledger, statements are taken off, added and compared with the sales ledger. Coal often is shipped to some railroad station where there is no agent, necessitating the prepaying of freight charges on the shipment. In this event it is necessary to make a debit charge against the customer, to journalize this charge, post it to the ledger and then enter it in the controlling account in the general ledger.

USUAL PLAN, THOUGH SLOW, WILL SERVE

Allowances often have to be made to the customers on account of faulty preparation, which allowance has to be posted or journalized, the proper account being credited in the sales ledger, the same item being posted to the controlling account in the general ledger. All these items, of course, have to receive consideration in preparing the statement against the customer. When the customer pays on his account, the check is taken, compared with the account in the sales ledger, written up in the cash book of the sales ledger account, and is posted to the credit of the customer in the sales ledger, postings being proved, so as to show that no credits have failed to receive consideration.

That method of handling the sales account will produce the desired results, provided it is carefully and accurately done, but the repeated copying of figures is likely to introduce errors and the time involved in doing the work in this way and the strain which comes at the beginning of every month greatly delays statements, for the clerical force has at that time to do a lot of balancing of accounts in order to be sure that every-

thing ties in properly. Delays in getting statements to the customer mean delays in getting returns; thus capital is tied up unnecessarily, and a larger investment is needed than would be necessary with a better accounting system.

The efficiency exhibited in the management of production is lost if that efficiency is not carried through all departments. Whenever the work is done by the usual methods and done with due accuracy too long a time passes between the day when the amount the customer owes is on record and the day when the cash is deposited in the bank. Of course the work must be done accurately or it is practically useless. The purpose of this article is to reduce the cost of transporting these accounts through the office by reducing the number of men employed and by making use of mechanical equipment—precisely the same result we expect to derive from introducing mechanical haulage at our mines. Combining as many operations as possible into one will effect this result.

We will now take up the work by the new methods, commencing with the bill of lading as it stands after the railroad weights have been inserted. On the memorandum or office-file copy we ascertain the tonnage, multiply this by the price per ton and pencil in the name of the customer. After we have made these calculations on all of the memorandum bills of lading for the day, we go to the adding machine and total the tonnage of the shipments and their value, saving this tape as a showing of the total tonnage shipped and its aggregate selling price.

We are now ready for handling this information in our bookkeeping machine. The superintendent long ago replaced the old hand picks by undercutting machines. Just as he has demonstrated to us the efficiency of machine methods in mining, we are going to demonstrate to him the superiority of machine over pen methods in bookkeeping.

FOUR FORMS AND THREE CARBONS IN MACHINE

We put Form A-1, our "daily audit sheet of coal sales," in our machine and let it stay there. This is placed under a carbon sheet in roll form in the machine, and, as we want to charge our customer, we put in also at the same time the accounts receivable ledger sheet, Form A-2. As we want to mail our customer a monthly statement of his account at the end of the month, we put in a third sheet, Form A-3, "statement of account" under which is a carbon roll. We also put the invoice in the machine over a carbon sheet. So now we have four forms and three carbons in the machine.

We then collate our memorandum bills of lading according to customers, and, assuming that we have not had any account with the customers, we take each bill of lading and write the data on the invoice, showing first the date, the order or invoice number, the car initial and number and then the grade. Moving over into the

weight columns, we insert the weight in pounds and then in tons. We next insert the price which he is to be charged. Then in the amounts column we place the amounts or extension on each car.

When we have entered all the bills of lading for this customer on the little adding machine we have over the amounts column the totals of these items of the invoice, and we move over into the charge column and write this total. As we have no more charges for this customer, we move over on the statement, and, in the balance-due column we write the amount which our machine has automatically accumulated for us as the balance.

After making each entry of each bill of lading, we distribute the sizes by tonnages and amounts, writing these entries on the part of our sales sheet that extends beyond the other forms. This we do by moving over and making entries in the appropriate columns. Assuming now that we have some more charges to this customer, we put in a new invoice and over in the extreme left of the invoice, in "old balance" we write the amount shown at the right of the statement sheet "balance due" and proceed as before.

Suppose that now we have paid the freight on a car for a customer to a prepay station. We leave the coal-sales sheet in the machine, removing the others, take the ledger sheet and the statement sheet and put them in the machine. We take the debit memorandum, Form A-5, and after writing the balance in the "old-balance" column, we fill in the date, number of the charge ticket, the data in the data column and the amount in the charge column, after showing such items as are necessary in the items column. After writing this in the charge column we move over to the "sundry" column of our sales sheet and write the credit to our prepaid freight account.

WE ARE NOW READY TO CHECK OUR FIGURES

After we have written up all the bills of lading for that date, we write in the totals at the bottom of the following columns: Pounds, tons, debit sales ledger, old balance, new balance, repeat old balance, tons and amounts under "block," "egg," "R.O.M.," "slack" and "sundries." If we have done our work correctly the total tons will agree with our adding-machine tape of tonnages and the total debit to sales ledger will agree with our total amounts, plus any freight charges we have made. The total debit to sales ledger will agree with the total credits in the sales-distribution columns.

The distribution of the different tonnages will agree with the total tonnages shipped. To these totals we will add the accumulation for the previous dates, and the last sheet at the end of the month will show us the total tonnages shipped, the total debits to our sale ledger and the corresponding credits, giving us one entry for posting to our general ledger at the end of the month. As we have the total tonnages for the month by grades and the total amounts by sizes it is an easy calculation for us to determine the selling price averages by sizes, and also the general average for the month.

We have now completed our sales sheets and are ready to enter remittances. We put first into the machine Form B-1, "daily audit sheet of credits to accounts receivable." Let us suppose now that we have a check from the Ohio Valley Coal Co. paying on account; so we get their ledger sheet, Form A-2, and their statement of account, Form A-3, putting the necessary carbons between them.

We write in the "old balance" column the balance as

shown by the statement, the date and sufficient data to identify the check or remittance received and put the amount in our credit column. Our machine has told us the balance left after this payment, so we write the balance in the balance-due column. We then write the name of the customer on our credit sheet and as we are running three bank accounts and are making daily deposits, we charge in the proper column the bank in which we are going to place the check.

HOW TO ENTER ALLOWANCES AND COMMISSIONS

Now, possibly, we have a contract with the Ohio Valley Co., whereby we allow them a commission on their sales, or it may be that we wish to make them an allowance because of faulty preparation, excess freight or some other allowance which always confronts the coal man. We take our ledger and statement sheet and put them in the machine. We then take a "credit memorandum," Form B-2, and put it in the machine, write in the data and put the total of the items credited in the "amount credited" column, writing on the statement the automatically calculated new balance due, at the same time making an appropriate charge on the daily credit sheet. When we have finished our total credits for the day, the total credits to our sales ledger will agree with the total debits to banks and sundry items and by bringing these items forward from day to day we have totals for posting to our general ledger.

After entry of the last day's business, which at the average mine will be around the first or second of the following month, depending upon the rapidity with which we receive our weights, we are ready to mail out our statements. These statements to the customers are itemized in every respect and proved with the ledger accounts to the penny.

Because we are able to get our statements in the mail so promptly at the end of the month we are going to be able to collect on the 10th, as sales agencies will not be able to put up the usual excuse of delayed statements.

The basis for the disbursements entry is the vendors' invoice. The vendors' invoices for each day are assembled in alphabetical order, and an adding-machine run is made of them for the predetermined total. The distribution of the charges is indicated on each invoice. A voucher, Form C-1, is prepared in duplicate for each vendor. At the time the entry is made on this it is copied through by carbon process on the purchase-record sheet. The first items for each vendor are written in order according to the invoices, entry being made in the detail column and the daily total moved over into the next or credit column. The balance is calculated by the machine and written in the "new-balance" column.

UNNEEDED ENTRIES TORN OFF AT PERFORATION

It is well to call attention here to the reversal of the usual order of debits and credits so as to use the same machine for handling receivables and payables. If there is already a balance in favor of the vendor this balance is written in the old-balance column and the machine automatically calculates the balances.

After entry is made in the voucher, corresponding charges to the various subsidiary expenses in the general ledger sheet are made on the purchase record, Form C-2. It will be observed that Form C-1 is perforated just to the right of the "old-balance" column, so that the check and remittance slip will go to the vendor without the old-balance pick-ups being shown.

At the end of the month or whenever the vendor's or

Form A-1 General Coal Company Daily Audit Sheet of Coal Sales For _____ 192____																			
Old Balance	Date	No.	Car Initial & Number	Grade	Railroad Weights Pounds	Tons	Price Per Ton	Items	Debit Sales Ledger	Credits	New Balance	Customer	Repeat Old Balance	Cr. Block Sales Tons	Cr. Egg Sales Amount	Cr. R. o. M. Sales Tons	Cr. Slack Sales Amount	Sundry Credits Item	Amount

Form A-3 Statement Mineral City, Ky., _____ 192____										Form B-2 Mineral City, Ky., _____ 192____									
In Account With General Coal Company										General Coal Company Credit No. _____									
Old Balance	Date	Order No.	Car Initial & Number	Grade	Railroad Weights Pounds	Tons	Price Per Ton	Amount Items	Debits	Credits	Balance Due	We Credit You As Follows:							
												Old Balance	Date	No.	Credit Data	Items	Amount Credited		

Form C-1 Voucher Check Mineral City, Ky., _____ 192____									
General Coal Company Pay: _____ to the order of _____ Old Balance Date Check No. Discount Bal. Due _____ _____ _____ _____ _____ The Sum of _____ In full for statement attached To _____ By _____ _____ Counter Signed _____									
Old Balance	Date	Inv. No.	For the Following Items	Detail	Credits	Debits	New Balance	Dr.	

Form A-2 Accounts Receivable Ledger _____ Dr.											
Old Balance	Date	No.	Car Initial & Number	Grade	Railroad Weights Pounds	Tons	Price Per Ton	Items	Debits	Credits	New Balance

Form B-1 General Coal Company Daily Audit Sheet—Credits To Accounts Receivable For _____ 192____														
Old Balance	Date	No.	Credit Data	Items	Debits	Credits Sales Ledger	New Balance	Customer	Repeat Old Balance	Bank Debits	Sundry Debits			
										First Nat'l	State Bank	Third Nat'l	Name	Amount

Form C-2 General Coal Company Purchase Record For _____ 192____															
Old Balance	Date	No.	Items	Detail	Credits	Debits	New Balance	Vendor	Repeat Old Balance	Debit Accounts	Other Debits				
										Mine Expense	General Sales Expense	Commissary Purchases	Commissary Expense	Name	Amount

Form C-3 General Coal Company Check Register For _____ 192____													
Dr. Accounts Payable	Date	No.	Payable to the order of	Discount Taken	Amount of Check	Amount of Old Balance	Credit Banks	Miscellaneous Debits	General Ledger Debits				
							First Nat'l	State Bank	Third Nat'l	Pay Rols	Salaries	Name	Amount

Form A-5 Debit Memo Mineral City, Ky., _____ 192____									
General Coal Company No. _____ We Debit You As Follows:									
Old Balance	Date	Memo No.	Charge Data	Items	Total Charge				

Form A-4 Invoice Mineral City, Ky., _____ 192____									
General Coal Company Sold To _____ Inv. No. _____ Railroad Weights Govern All Settlements									
Old Balance	Date	Order No.	Car Initial & Number	Grade	Railroad Weights Pounds	Tons	Price Per Ton	Amounts	Charge

creditor's amount is due, there is nothing to do but draw the check. The usual custom with coal companies is to deduct a fixed percentage, say 2 per cent, of the total month's charges for payment between the first and fifth of the succeeding month. Check record, Form C-3, is placed in the machine and the vouchers (original and duplicate) are arranged for vouchering. The last amount in the balance column is written in the "old-balance" block, at the left of the check and the name and address of the payee written in. At the same time the date and check number are put in.

The amount of the discount to be deducted is written after the name of the payee, and the machine automatically calculates the balance due. The duplicate voucher can then be filed in alphabetical order, to which is attached all of the invoices covered by the voucher. It will be observed from this that Form C-3, being in the machine, will automatically get at the extreme left the debit to accounts payable, the credit to purchase discounts and the net amount of the check. As we have provided in the receipts side of the cash book for three banks, similar columns are provided on the check register and the bank on which the check is drawn should be credited by entry in the proper column.

A few checks necessarily will have to be written for payrolls, and other items not affecting accounts payable, and for that reason debit columns have been provided. In writing a check for this kind of a transaction the entries are not accumulated in the "old-balance" column or in the discount column.

LEAVE AS LITTLE AS POSSIBLE TO MONTH'S END

The advantages of this system over ordinary pen-and-ink methods are that balances are automatically accumulated after each transaction. There is no lost time at the end of the month in preparing statements for debtors and proving them with the ledgers. Remittance advices and vouchers are ready for mailing to creditors after the last invoice is entered.

The totals of each column of the proof sheets are written in from adding registers at the close of each day, the amounts for the previous day to date written next and the last line will show the totals down to date. After making the entries for the last day of the month, totals are ready for posting to the general ledger without having to recapitulate a large number of sheets.

Proofs of accuracy of the work are obtained from the daily audit sheets in the following manner:

A-1, Coal Sales Sheet—

Old Balance agrees with Repeat Old Balance.

Pounds in "Railroad Weights" will be two thousand times amount in tons.

Total Tons in "Railroad Weights" will agree with total tons by grades.

Debit to Sales Ledger will agree with Distribution Credits.

B-1, Credits to Accounts Receivable.

Old Balance agrees with Repeat Old Balance.

Credit Sales Ledger agrees with Debit Distributions.

Both Forms

Total of "Old Balances" and "Debits" agrees with "Credits" and "New Balances."

C-2, Purchase Record

Old Balance agrees with Repeat Old Balance.

Credits agrees with detail distribution of debits.

Old Balances and Credits agrees with Debits and New Balances.

C-3, Check Register

Old Balance agrees with Repeat Old Balance.

Totals of three bank columns and discounts agrees with totals of All Debit Columns.

If the company produces 100 cars of coal per day and handles 300 payable invoices daily, the bookkeeper can handle this system in less than four hours per day, provided the tonnage calculations and bills of lading are priced for him. Two people can handle the accounts receivable and payable for a 4,000-ton operation with this system, an impossibility with pen-written books, to say nothing of the advantages of rendering accounts promptly at the close of each month.

June Explosives Sales Show Increase

Sales of explosives in June 1923 for use in the United States according to the U. S. Bureau of Mines amounted to 529,697 kegs of black powder, 4,442,175 pounds of permissible explosives, and 18,174,435 pounds of explosives other than permissibles. Each of these figures represents a large increase over sales in June last year. The figures are based upon reports of manufacturers whose yearly sales represent 85 per cent of all black powder used in the United States, 88 per cent of all permissibles, and 81 per cent of all other high explosives. The sales in May amounted to 502,747 kegs of black powder, 4,894,200 pounds of permissibles, and 21,546,905 pounds of high explosives other than permissibles.

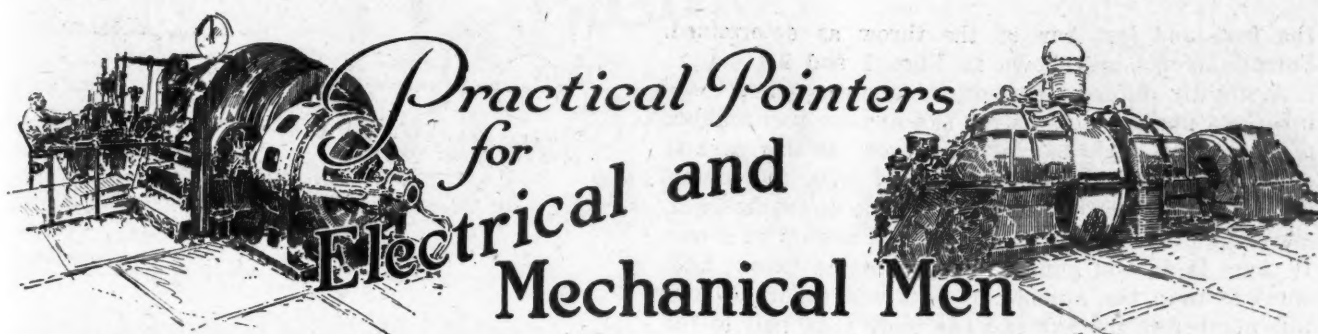
The June sales of black powder were considerably in excess of the amount sold in June 1922 and 1921. Since the beginning of the present calendar year, sales of black powder aggregating 3,643,093 kegs have been reported to the bureau, representing an increase of 63.2 per cent over the amount reported for the first half of 1922, and 49.5 per cent over the 1921 six-months period. Of the total amount sold to date in 1923, coal mining required 87.1 per cent, other mining 2.1 per cent, railway and other construction work 4.8 per cent, and miscellaneous purposes 6.1 per cent. The number of kegs of black powder used by coal miners to date is 3,173,933 kegs, equivalent to 79,348,325 pounds, an amount representing 245 pounds for every thousand tons of coal produced in this country since January 1.

The quantity of permissibles sold in June was much larger than the amount sold in the corresponding month of one and two years ago. The total sales for the first half of 1923 were 29,127,152 pounds, exceeding the record of the first half of 1922 by 93.4 per cent and of the first six months of 1921 by 64.4 per cent. Of the total sales during 1923 to date, 93.7 per cent was for coal mining, 1.3 per cent for other mining, 0.6 per cent for railway and other construction work, and 4.4 per cent for miscellaneous purposes. For each thousand tons of coal produced since January 1, the consumption of permissibles has averaged 84 pounds.

Sales of high explosives in June other than permissibles were greatly in excess of those for June 1922 and 1921. For the first six months of 1923, sales of 115,155,946 pounds were reported, an amount 44.4 per cent in excess of that for the corresponding period last year and 51.4 per cent above the sales during the first half of 1921. Of the total 1923 sales, 16.0 per cent was for coal mining, 40.9 per cent for other mining, 10.0 per cent for railway and other construction work, and 33.1 per cent for miscellaneous purposes.

Cement Shipments and Stocks Decline

Production of portland cement during July, 1923, according to the Geological Survey, totaled 12,620,000 barrels, as compared with 11,557,000 barrels in the corresponding month of 1922, and 12,382,000 barrels in June, 1923. Shipments for the month were 13,712,000 barrels, as compared with 13,850,000 barrels in July, 1922, and 13,307,000 barrels in June, 1923. Stocks at the end of July amounted to 8,076,000 barrels, as compared with 8,433,000 barrels in July of last year, and 9,168,000 barrels in June of this year.



Placing Winding on Locomotive Armatures

TO insure the best life from an armature, extreme care should be used to see that every point that might cause failure is guarded in a satisfactory manner while the armature is being wound. First of all, any sharp corners and any roughness in the slots that might damage the coils should be filed down and all chips and filings removed before applying the insulating material to the core. In applying the insulating material on the coil supports, the material should be evenly placed, and thin spots avoided.

Fit of Coil in Slot.—The coils should fit tightly in the slot and wind so that the top of the coil is $\frac{1}{2}$ in. above the band groove. Fillers should be used between the coils if necessary to meet these conditions. This will permit the bands to pull the coils down tightly and at

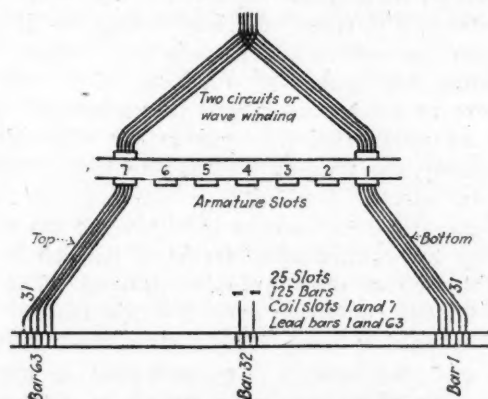


FIG. 1—LAYOUT OF WINDING WITH AN ODD COIL THROW AND AN ODD THROW OF LEADS

Care should be exercised at all times while placing the winding; this is especially true when placing the first coil, which locates the others which follow.

the same time finally rest on the iron, which allows minimum movement of the coils in the slots. If the coils are wound too high the bands will not rest on the iron and when the insulation dries out in service loose bands will result.

Winding Coils in Slot.—The coils should not be twisted, bent or abused any more than is absolutely necessary to get them in place. Care should be taken not to get the wires or leads crossed in such a manner that when pressure is applied in banding short-circuits will occur. The coils on the end windings should be down, so as to make a solid foundation for the bands, but pounding should not be carried to the extent that the coils or leads will be damaged. Insulating protecting pieces should be placed at all points where the coils cross and where there is danger of short-circuit occurring. It is good practice to weave braid between the leads directly back of the commutator, both on the top and bottom layers.

Armature Coil Leads.—The leads should be tinned

back to such a distance that there will be no untinned copper in the commutator neck. The cotton sleeving on the leads should not be allowed to get into the commutator slot, as it may hinder soldering to such an extent that a poor connection will result. The tool used in driving the leads into place should be free from sharp corners that might nick the leads, as a nicked wire may result in a broken lead.

Layout of Commutators.—Most direct-current windings used in haulage motor work are of the wave or two-circuit type. In laying out such a winding it is necessary to know the throw of the coils and the throw of the leads. The throw of a coil is the distance spanned on the core designated in terms of the slots—that is, if the coil throw is stated as 1 and 8, the bottom of the coils lies in slot No. 1, while the top of the coil is in slot No. 8. In a similar manner the throw of the leads is the distance spanned on the commutator in terms of the commutator bars.

When there is an odd number of leads per coil or if, when a dead coil is taken care of, an odd number of leads remain, the following is the method to be used:

Locate the center between the slots indicated by the coil throw. If the lead throw is an odd number of bars, this center will line up on a commutator bar, and if it is an even number of bars, it will line up on the mica between bars. This bar or mica is the starting point for laying off the commutator. If there is an odd number of bars in the throw, take one less than the number of bars and count off half of this number each direction from the starting bar, and this will give the first and last bar of the commutator throw. If there is an even number of bars in the throw, count off half the number in each direction from the starting mica. A check is to count from the first to the last bar, and see if it agrees with the information given. As the first coil put down will have an odd number of leads, the center one of the top and bottom leads should be placed in

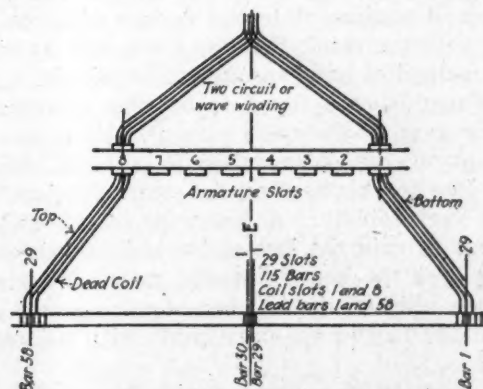


FIG. 2—LAYOUT OF WINDING WITH AN EVEN COIL THROW AND AN EVEN THROW OF THE LEADS

With this development there is a dead coil. This results whenever there are an even number of coils per slot.

the first and last bar of the throw as determined. Sample layouts are shown in Figs. 1 and 2.

A slightly different method is necessary when there is an odd number of coils per slot and an even number of slots. This seldom occurs, however. In this case, if the lead throw is an odd number of bars, the center, as indicated by the coil throw, will line up on the mica, and if an even number of bars, it will line up on a bar. If there is an odd number of bars in the throw, take one less than the number of bars and count off half this number to the left and one more than half to the right, and this will give the first and last bar of the commutator throw. If there is an even number of bars in the throw, count off half the throw to the right and one less than half to the left. If there are two leads in the first coil, No. 1 lead should lie in No. 1 bar, and if there are four leads in the first coil, No. 2 lead should lie in No. 1 bar.

ALIGNMENT OF COMMUTATOR BAR AND MICA WITH ARMATURE TOOTH AND SLOT CENTER LINES

Coil throw even	}	mica with tooth
Lead throw even		
Coil throw odd	}	bar with slot
Lead throw odd		
Coil throw even	}	bar with tooth
Lead throw odd		
Coil throw odd	}	mica with slot
Lead throw even		

Winding Rules.—The wave or two-circuit winding always requires an odd number of commutator bars.

When an even number of coils per slot are used there always will be an idle or dead lead.

When an odd number of coils per slot are used and there are an even number of slots on the armature, there will always be an idle or a dead lead.

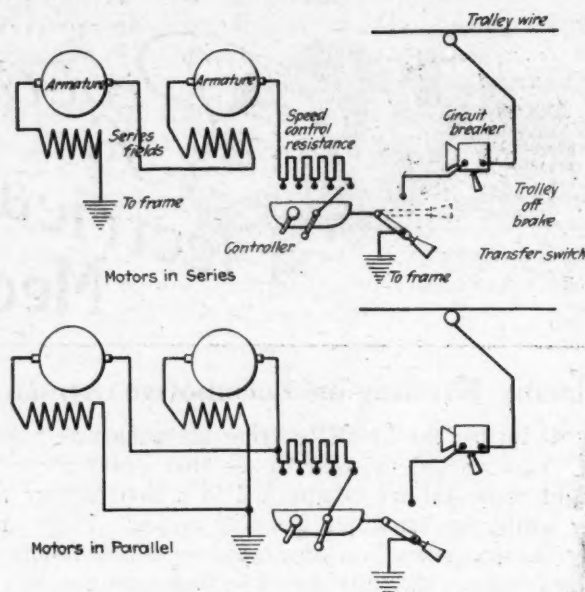
When an odd number of coils per slot are used and there are an add number of slots on the armature, there will never be an idle or a dead lead.

Dynamic Braking of Electric Mine Haulage Locomotives at Hazleton Shaft Colliery

IN THE development of the local coal basins of the Hazleton Shaft Colliery it was found necessary to drive backswitch gangways on account of basins rising ahead on an average of approximately 8 per cent. The length of these gangways is about 2,000 ft. The customary way of gathering and handling 12 loaded cars down the grades was by attaching an electric locomotive to the trip and placing steel shoes under the car wheels. Trouble was frequently experienced due to the shoes becoming dislodged and falling out from under the car wheels. This exposed the motorman as well as the locomotive and equipment to the danger of a runaway or wreck, with the result that the motorman reverted back to the method of hand spragging the wheels.

This method was found to be very injurious to the running gear of the mine cars as well as the locomotives in general and resulted in a high maintenance cost. Due to this method flat spots developed on the wheels very rapidly. A few trips in this section was sufficient to ruin the locomotive and car wheels due to sliding over the heavily sanded rails. Wheels in this condition reduced the number of mine cars possible to cage at the foot of the mine shaft with a normal force of men.

The question of a more suitable means of controlling the load on these grades became a problem for the colliery electrical department to solve. After careful consideration it was decided to apply means for dynamic



LOCATION OF TRANSFER SWITCH

These sketches show the connections of the motors in series and in parallel when effecting electric braking. Without any further change than grounding the trolley cable, electric braking is accomplished: Under certain conditions the parallel operation may cause one motor to generate power into the other motor and tend to drive it as a motor.

braking on the locomotives and this was to be accomplished with the minimum delay. The present or standard control equipment on the locomotives was used with the addition of a single pole double throw knife blade switch for the purpose of disconnecting the trolley circuit from the motors and to provide a circuit through the motors for control of the transition from motor to generator action, as it will be understood that the motors are converted into generators when driven in this manner, the trailing load furnishing the necessary power for electric braking.

The operation for braking is to reverse the motors so that they are connected in series or parallel depending upon the amount of retardation desired. The reverse handle on the controller provides this means, and the control handle is used for varying the resistance in series with the motors now operating as generators. The braking effect can be controlled by decreasing the resistance which increases the braking power, and this in turn decreases or controls the speed of trains down grade. The resistance here referred to is the same resistance used for speed control when operated as a haulage locomotive. This method of electric braking has been in successful operation for the past several months. The accompanying wiring sketch will give a clear idea of the arrangement and operation.

PETER BROADT.

Division Electrician, Lehigh Valley Coal Co.,
Hazleton, Pa.

Owing to the steepness of the grades on which this locomotive is used and the weight of the loaded trip it is probable that the braking is nearly always done with the motors in series. This being the case the difficulties mentioned by Mr. Holsopple in his article, which appeared in the Aug. 23 issue of *Coal Age*, when operating the two motors in parallel as generators is not experienced.

This is a real case where greater safety, less maintenance cost and better output are realized at once, through the application of the principle of electric braking. No doubt many opportunities similar to this one exist in nearly all mines.



Problems of Operating Men

Edited by
James T. Beard



Developing Two Coal Seams on Steep Pitches

Mine Opened by Cross-Tunnel—Main and Counter Levels Driven Right and Left in Seam—Coal Mined by Chutes on the Full Pitch of the Seam

REFERRING to the inquiry that appeared recently in *Coal Age* (June 7, p. 942), regarding the best method of developing two coal seams, pitching 45 deg. and separated by 125 ft. of strata, where the physical conditions are such that the seams must be approached from the hanging wall side, I will say that the plan suggested of driving a cross-tunnel to reach these seams is quite practical.

In British Columbia there are two coal properties, both of which were opened under conditions that must have been similar to those here described—the Hosmer mine, on the Canadian-Pacific Ry. and the Coalmont mine, formerly operated by the Columbia Coal & Coke Co. The Hosmer mine was developed by two tunnels, while the mine at Coalmont was opened by a single tunnel only.

In the inquiry to which I have referred, no mention is made of the seams generating gas; but I will assume they do, as that is most common under conditions such as have been described. My plan would be to make ample provision in the cross-tunnel for a permanent traveling way for the men going to and from their work, as the town will undoubtedly be built where the plant is located.

DETAIL DESCRIPTION OF THE DEVELOPMENT

The tunnel should be driven 18 ft. wide and 7½ ft. high, which will give room for a double-track haulage road and a manway on one side. Safety holes should be provided on the manway side of the tunnel, at intervals of 100 ft. apart, and these should be cut 5 ft. wide and 8 ft. deep and kept whitewashed and free of every obstruction at all times.

For the ventilation of the tunnel while driving and also for that of the mine until a second opening and return air-course is provided, a good substantial partition should be built in the center of the tunnel. The partition should be provided with explosion doors, every 100 ft., which will serve to relieve the pressure on the brattice caused by the heavy blasting common in tunnel-work.

To provide ventilation during the development of the mine, a fan of sufficient capacity should be installed on the surface, at one side of the tunnel, where it will not be in a direct line with the heavy concussion due to blasting. A conduit built on an easy curve should connect the fan with the tunnel opening.

Where the cross-tunnel intercepts the coal seam I would start driving the main entries to the right and

left of the tunnel, on a grade of 8 in. per 100 ft., in favor of the loading cars. These main entries should be 12 ft. wide and 8 ft. high and provided with a ditch 2 ft. wide and 18 in. deep, made in the coal on the low side of the entries.

At the same time, an air-course should be started in the formation above each main entry, leaving a 50-ft. pillar of coal between the entry and the air-course. The air-course should be driven 10 ft. wide and 8 ft. high and connected by crosscuts with the main entry, at intervals of 60-ft. centers.

COAL LAGGED ON HIGH SIDE OF ENTRIES

In order to prevent the coal from falling from the rib on the high side of these openings, posts 12 in. in diameter should be set 5 ft. apart and properly lagged, in both the main entry and the air-course above. In the later development of the mine, the crosscuts will serve as chutes for the extraction of the coal in the rooms.

When the entries and air-courses have advanced 100 ft., on each side of the tunnel, I would at once start two pairs of rise headings, one on each side of the tunnel. I would push these raises through to the surface or outcrop with all possible speed, employing three shifts for that purpose.

The idea of making three shifts is to provide second openings as quickly as possible and enable the full development of the mine to proceed without delay. This is important inasmuch as the mining law, in most cases, limits the number of men to be employed in a mine, until a second opening and escapeway is provided.

At the points where the rise headings reach the surface, two large ventilating fans should be installed. These fans should have ample capacity for the future development of the mine; and great care must be taken in laying out the work in respect to this feature, in order to reduce to a minimum the expense of ventilation and make the mine healthy and safe for work.

RETREATING PLAN, CHUTE MINING

When this preliminary work has been accomplished the development of the mine can proceed without further delay. If the invested capital will permit, the main entries and air-courses should be driven to the boundary lines of the property and extraction of the coal commenced at those points on the retreating plan of the room-and-pillar method of mining. The rooms should be driven 25 ft. wide, on 60-ft. centers, leaving 35-ft. pillars between them.

The general plan adopted in working this seam of coal is that known as "chute mining." I do not consider it practicable to make the length of the chutes or the distance between levels such that there will be danger of breaking and crushing the coal on this account. The length of the chutes and distance apart of the levels must be determined with this idea in view.

Counter-levels and air-courses are driven to the right and left of each pair of raises, after the manner described in respect to the main entries and air-courses. In order to preserve a proper breaking line across the several levels, it is important to see that the work in the upper level is kept in advance of that in the level next below, in each case.

In conclusion, I would suggest that it is possible to adopt some economic system of dropping the coal mined in each level, by a suitable conveyor system installed on the rise headings mentioned, and that matter should receive careful consideration.

AJAX.

Welch, W. Va.

[We assume this correspondent has in mind the mining of the two seams independently, completing the extraction in the upper 5-ft. seam, before attempting to work out the 6-ft. coal lying 125 ft. below.—EDITOR.]

ANOTHER LETTER

Tunnel to reach seam—Main heading driven up pitch, with levels to right and left—Extraction by longwall face at angle with pitch.

MY METHOD of working the two seams pitching 45 deg., mentioned in the inquiry of L. L. Travis, *Coal Age*, June 7, p. 942, would be to adopt the longwall system of mining. The plan should be carried out in such a way that the longwall face can be arranged at an angle with the pitch best adapted to the working of the coal in question. This will vary with the conditions existing in the seams and can only be determined in the course of development.

When the cross-tunnel has reached the upper or 5-ft. seam a main heading should be driven directly up the pitch to the outcrop of the seam, a distance described as about 2,000 ft. At the same time I would drive two levels, respectively right and left in the seam, giving to each road a grade that will afford the best results in hauling the loaded and empty cars out and into the mine. This grade must be carefully calculated according to the size and number of cars hauled in a trip. The main levels must be driven perfectly straight to insure good haulage.

MAIN LEVEL AND AIR-COURSE DRIVEN IN ROCK

One of the chief points to be considered, in driving the levels in a steeply pitching seam, is to provide for the support of the rib on the high side of the road. For that reason, I would drive the main right and left entries starting from the face of the tunnel by taking out 10 ft. of bottom rock on the high side. Then, for a clear width of roadway of, say 8 ft. and 6 ft. of headroom, on a pitch of 45 deg., there would be 2 ft. of rock to lift on the low side of the road.

By this means, the main road would not be materially affected in the extraction of the coal all of which is to be taken out in the longwall method. In this plan, a low level should be driven about 30 ft. below the main level and, in the course of development, this low level could be cut off at distances of 400 ft. by an angle road from the main level. The extraction of the coal between the two levels would afford ample room for the storage of the waste rock taken from the main level.

When the main heading has been driven up the pitch 150 ft., two more levels can be driven to the right and left, respectively. Unlike the main level, however, these counter-levels must be brushed mostly in the top, since the heading has to serve as a chute into which the coal

from these levels must be dumped. As the levels are advanced a suitable distance, a panel is formed and the extraction of the coal between the two levels started by arranging a longwall face at a suitable angle with the pitch of the seam.

CONVEYOR USED ON LONGWALL FACE

My idea would be to erect a conveyor on the line of this longwall face so that all of the coal can be carried to the main level and there loaded into cars to be hauled out of the mine. The size of the panel, distance between levels, the angle of the longwall face with the pitch and the style of conveyor adopted must all be made to conform to conditions found to exist in the seam.

Regarding the support of the roof, it should be stated that wooden cribs will be required to be built on the high side of the road on all counter-levels, while the main heading will require to be cribbed on both sides of the road. It will be necessary to brush the roof on the heading, the rock from which can be built on each side of the road. The longwall face will also require cribbing at intervals and these cribs must be taken out as the work is advanced. After the first great break-occurs, the settlement of the roof will be more gradual.

My preference for the longwall method of working is that it will require far less timber, practically no explosives and afford a more complete extraction of the coal. If this system is found to work in the upper 5-ft. seam, the company has got an "Eldorado," as cross-levels can be driven, at suitable points on the main level, and the coal in the second seam taken out through these openings.

JOHN MCNEIL.

River Herbert West, N. S.

Arbitration of Disputed Authority of Mine Inspector

Protracted method of arbitration prescribed by law fails—The law in British Columbia more direct in accomplishing results.

IT WAS with some surprise that I read, a short time ago, in *Coal Age* (May 24, p. 862), an account outlining the practical working of the Bituminous Mine Law of Pennsylvania, in respect to the settlement of dispute between the district mine inspector and the operator of a mine, regarding an order of the former.

My impression on reading the account was that it revealed a very unsatisfactory condition of affairs and one that might seriously affect the safety of the workmen engaged in the mine, to say nothing of the security of the property in question, for which, however, the operator would take his own chances, in disputing a claim of the inspector and refusing to obey his orders.

DISAGREEMENT IN OPINION WILL OFTEN ARISE

It cannot be denied that a situation in which an operator disagrees with the conclusions of a district mine inspector, concerning conditions in the mine, will often arise. If my recollection serves me rightly the outline of proceedings, described in the letter to which I have referred as the method laid down in the bituminous law, was such that a possible six weeks or more might elapse before any final decision could be reached.

In the management and operation of a coal mine, nothing is of greater importance than the safety of the workmen employed; and there should be no delay in removing any alleged dangerous condition, or in reach-

ing a settlement of a dispute that might arise regarding its existence. In this connection, I should like to point out the law laid down in the statutes of British Columbia, relating to such a situation.

The Coal Mines Regulation Act (Sec. 79, 1) reads as follows:

If an inspector, upon careful investigation, is of the opinion that a mine or any part thereof is in any respect dangerous; or that any matter, thing or practice done, followed, or permitted in, about, or in connection with such mine, constitutes a defect calculated to impair the efficiency of mining operations, or to endanger the safety of any persons in or about such mine; such inspector shall give notice thereof, in writing, to the owner, agent or manager of the mine, stating in such notice the grounds of his opinion; and shall, by the said notice or otherwise, order that such remedies be applied and such provision be made for the safeguarding of those employed in or about the mine as he thinks requisite.

If the inspector is of the opinion that any delay in remedying such matter would be dangerous he may order the closing of the mine or any part thereof, or may order the stopping of all work therein or connected therewith, until the matter complained of be remedied; and, in every such case, the inspector shall forthwith transmit to the minister of mines a copy of the order and a full report of the reasons therefor.

Any owner, agent, manager or other person refusing or neglecting to obey any order given by the inspector under this subsection shall be guilty of an offence against this act.

To prevent the abuse of this power by the inspector, however, the law (Sec. 81) provides as follows:

If the owner, agent or manager of the mine objects to any order of an inspector, under either of the last two preceding sections, he may, within twenty-one days after receipt of the notice of such order, send his objection, in writing, stating the grounds thereof, to the minister of mines; and thereupon the matter shall be settled by arbitration, in the manner provided by this act, save and except that in such arbitration the parties to such arbitration shall be the owner, agent or manager of the mine, on the one hand, and an inspector (on behalf of the minister of mines), on the other; and the date of the receipt of such objection shall be deemed to be the date of the reference.

Inquiries Of General Interest

Calculating Required Grade of Slant Road in Mine

Three Angles A, B, C Involved in the Calculation

--First Find Rise on Full Pitch, per 100

Ft.—Then Find Grade Angle for Same Rise

KINDLY explain, in the columns of *Coal Age*, how it is possible to calculate the grade of a slant road, in a seam having a given inclination, when the slant road makes any given angle with the direction of the full pitch of the seam. I have seen this method explained somewhere but have lost track of it and am anxious to know the process of easy calculation, as we have a number of such problems occurring in the mine.

Mahanoy City, Pa.

ASSISTANT FOREMAN.

The problem is a simple one and can be made quite clear by reference to the accompanying figure, which shows three vertical planes and a horizontal plane. The vertical plane $o y n$ marks the full pitch of the seam. We will assume that the rise $y n$ corresponds to the horizontal distance $o y$, equal to 100 ft.

Now, the vertical plane $o x m$ marks the direction of the slant road. The rise $x m$ is equal to the rise $y n$, since $n m$ is a strike line or level line in the seam. Evidently, the horizontal distance $o x$ being greater than 100 ft., the assumed basis of calculation, and the rise for this distance being equal to the rise on the full pitch of the seam, the slant road will have a less per-

Under the Coal Mines Regulation Act, each of the parties appoints an arbitrator, which must be done within twenty-one days. If either of the parties fails to appoint an arbitrator within that time the appointee of the other side proceeds to hear and determine the matter in dispute and his conclusions shall be final. On the other hand, should both parties appoint an arbitrator the two appointees shall select an umpire to decide on any points of difference that may arise between them. Failure of the arbitrators to agree upon the selection of an umpire gives the minister of mines the right to appoint an umpire, on the application of either party to the dispute.

Now, the point to which I wish to draw particular attention is the fact that the order of the inspector of mines stands good during all this proceeding. In other words, if I am not mistaken, the mine cannot be operated and the order of the inspector disregarded. All work affected by the order must cease, until such time as the matter in dispute has been finally decided.

There should be no hesitation in admitting that safety is the first consideration. That being true, it is right that work should cease where there is any doubt regarding the safe condition of a mine where men are employed. At the best, the work of mining coal is a dangerous occupation and should not admit of the taking of chances in questions of dispute.

Fernie, B. C.

GLEN CALDER.

centage of grade, or a lesser grade angle B , than the angle of pitch A .

The first step, then, is to calculate the horizontal length $o x$ of the slant road, corresponding to the horizontal distance $o y$ of 100 ft., in the direction of the full pitch of the seam; thus

$$o x = \frac{o y}{\cos C} = \frac{100}{\cos C} \quad 1$$

But, in the vertical plane $o y n$ corresponding to the full pitch of the seam, the rise $y n = 100 \tan A$. Again,

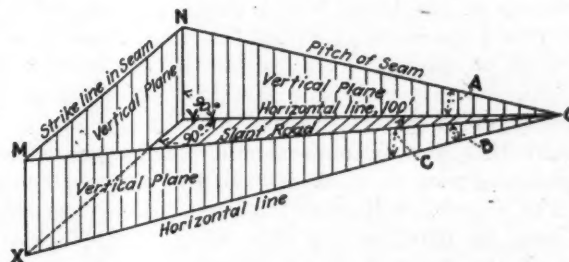


DIAGRAM SHOWING SLANT ROAD DRIVEN ACROSS PITCH

in the vertical plane $o x m$ through the slant road, the rise $x m = o x \tan B$; and since $x m$ is equal to $y n$, we write

$$100 \tan A = o x \times \tan B \quad 2$$

Finally, combining equations 1 and 2, we find for the value of the cosine of the grade angle C ; thus,

$$100 \tan A = \frac{100}{\cos C} \times \tan B$$

and

$$\cos C = \frac{\tan B}{\tan A}$$

In other words, the cosine of the angle that the slant road makes with the full pitch of the seam is equal to the ratio of the tangent of the grade angle to the tangent of the pitch angle.

To illustrate, let it be required to find the bearing of a slant road having a grade of 10 per cent, in a

seam having an inclination of, say 45 deg., when the pitch of the seam is due north. In this case, the tangent of 45 deg. being 1 and the tangent of the grade angle B , for a grade of 10 per cent being 0.1, $\cos C$, equals 0.1; and the slant road, therefore, makes an angle of $89^\circ 25'$ with the meridian corresponding to the full pitch of the seam. The bearing of a slant road turned to the right of the full pitch (due north) would then be N. $89^\circ 25'$ E. In this case the slant road would make an angle of 35 minutes with the strike of the seam.

Examination Questions Answered

Anthracite Foremen's Examination, Districts 3-7 incl., 1923

(Selected Questions)

QUESTION—*Explain the manner in which you would make a test for firedamp with a safety lamp.*

ANSWER—When making a test for explosive gas in a mine, the flame of the lamp should be lowered so as to cut out practically the bright luminous portion of the flame. The best results are obtained when a uniform height of flame is adopted. Holding the lamp in an upright position, it is carefully raised toward the roof or into any cavity where gas is suspected. While doing this the flame is closely watched for the first appearance of a faint blue cap surmounting the lamp flame, or any lengthening of the lamp flame, which would indicate the presence of gas. The height of the cap is an index of the percentage of gas present.

On the first appearance of any indication of gas, the lamp should be carefully withdrawn, making no quick movement of the lamp, which would tend to cause the flame of the gas burning within the lamp to pass through the mesh of the gauze and ignite the gas surrounding the lamp. When making a test in a quiet atmosphere a thin layer of gas at the roof may escape notice. To prevent this, the fireboss should blow a gentle whiff against the roof so as to disturb the gas and bring it down to where it will enter the lamp. In no case, should the lamp be tilted to one side, which would cause the heat of the flame to bear directly on the gauze and make the lamp unsafe. This is a dangerous practice of some firebosses.

QUESTION—*State the requirements of a good safety lamp for general mining use.*

ANSWER—The lamp must give a good light. It should be simple in construction, of few parts that can be assembled without danger of mistake or omission of any part, which would render the lamp unsafe for use. The design of the lamp should be such as to render it least liable to accident, fairly safe in strong air currents, light and portable. The flame should be so set in the lamp as to give a good range of illumination, upward on the roof and downward on the floor. The lamp should be provided with a lock fastening that will betray any attempt to tamper with the lock. The chimney of the lamp should be provided with a bonnet for protection against strong air currents and falling dust and dirt.

QUESTION—*What oils are generally used in safety lamps?*

ANSWER—A vegetable oil, as cottonseed, or an animal oil, as sperm or seal oil, is commonly used; except in lamps designed to burn a volatile or light mineral oil such as naphtha or benzene. The vegetable and animal oils first mentioned are the safest for common use, because they are not explosive. Greater precaution is needed when burning a volatile oil, and the vessel of the lamp must then be designed for that purpose.

QUESTION—*How should all doors affecting the ventilation in a mine be adjusted?*

ANSWER—Mine doors must be set in a substantial frame and in such a manner that they will close with the air current. The door must be given a slight fall so that it cannot stand open without being propped back. Doors controlling the main air current in a mine should be in duplicate and so arranged that when one door is open the other will always be shut. This is important in order to prevent the short-circuiting of the air when it is necessary to pass through a door separating the main intake and return airways. Besides these requirements, the anthracite law also requires an extra main door to be kept standing open where it will not be in danger of accident and can be at once closed should the door in use be destroyed from any cause.

QUESTION—*What portions of a mine would you most carefully examine in your rounds as a fireboss?*

ANSWER—Portions of the mine requiring the most careful attention on the part of the fireboss are those where danger from gas or bad roof conditions are most expected to develop. This does not mean, however, that other portions of the mine should be neglected in any manner. Where gas is being generated a good fireboss will naturally make a more careful test where he suspects gas than in places generally known to be free from gas.

QUESTION—*After passing the workmen into the mine in the morning what would be your duty as a fireboss?*

ANSWER—Upon completing his morning examination and the making out of his report in the book kept for that purpose, as required by law, and having passed the men into the mine, except those in whose places danger has been found, and having made a verbal report to the mine foreman in charge, the fireboss returns for his breakfast, after which he must start his second examination of the mine, by visiting those working places first where danger has been found. It is his duty to see that the work of removing those dangers is being performed in a safe manner and as promptly as possible. Following this, it is the fireboss' duty to visit in order every working place in his section and give the men any needed instructions in the safe performance of their work.

QUESTION—*What is dynamite and what proportion of nitroglycerine is contained in each grade?*

ANSWER—Dynamite is a detonating explosive formed by the absorption of nitroglycerine in some inert substance capable of absorbing and holding the liquid. Infusorial earth has been largely used as an absorbent. Wood meal and sawdust are also largely employed in the manufacture of dynamite. The percentage of nitroglycerine in the several grades of this explosive is generally given as follows:

Grade No. 1. 50-70 per cent,
Grade No. 2. 33-50 per cent,
Grade No. 3. 27-30 per cent,
Grade No. 4. 20-25 per cent.

Labor's Cause Safe in Hands of Coolidge, Says McMenimen

U. S. Railroad Labor Board Member, in London, Cites Official Record of New President as Showing Friendship to Labor

BY PAUL WOOTON
Special Correspondent of *Coal Age*

LONDON, Aug. 12.—Labor will make no mistake in placing absolute confidence in Calvin Coolidge, in the opinion of W. L. McMenimen, a member of the U. S. Railroad Labor Board, who is in Europe to study certain phases of railroad operation here. Mr. McMenimen is one of the labor members of the board and is recognized nationally as one of the most capable of the country's public servants who have been recruited from the ranks of labor.

"Because of the action Mr. Coolidge took in handling the unfortunate and ill advised police strike in Boston," said Mr. McMenimen, "many think Mr. Coolidge is unfriendly to union labor, at least. Such is not the case. Prior to the police strike his record had been all that labor could desire. This applies to his entire period of public service, which included such important posts as membership in the lower and upper houses of the State Legislature, the Lieutenant Governorship and the Governorship of the state and covers his official career at Northampton.

"Shortly prior to the police strike Mr. Coolidge had attended the convention of the state section of the American Federation of Labor as the special guest of the Federa-

tion. While a member of the Massachusetts Senate he supported the full-crew bill and was among those who voted to pass it over Governor Foss' veto. As Governor he signed the forty-eight-hour bill despite the fact that the measure was opposed with unusual bitterness by the owners of textile mills and by such influential organization as the Associated Industries and the Arkwright Club. No longer ago than last August, in the course of an address before the American Bar Association at San Francisco, he declared that he would rather be known as the Governor who signed the forty-eight-hour bill than the Governor who dealt with the police strike.

"From my long contact with Mr. Coolidge I am convinced that labor can trust him to do the just and fair thing at all times."

Mr. McMenimen's intimate acquaintanceship with President Coolidge began many years ago when Mr. Coolidge was a commuter between Boston and Northampton. Mr. McMenimen was the brakeman on the train which Mr. Coolidge used. The friendship which sprang up between them then has continued since and became closer during the years in which Mr. McMenimen acted as legislative representative of the railroad trainmen at the Massachusetts capital and at Washington.

The fear has been expressed that the succession of Mr. Coolidge to the Presidency would make the United Mine Workers less anxious to submit to the President for final determination any of the matters in which they had been unable to agree in their conferences with the operators. If so stalwart a champion of labor as Mr. McMenimen, who more than any labor leader is in a position to know, is willing it would seem that the anthracite workers are not justified in fearing unfair treatment by the new President.

Industrial Court Uncovers Irregularities in Subleasing of Kansas Coal Lands

Investigation concluded recently at Pittsburg, Kan., by the Kansas Industrial Court, of the terms under which the Jackson Walker Coal & Mining Co. subleases coal land in the southeastern Kansas district developed an inclination to veer frequently from the straight and narrow. In addition to examining the leases, the court sought to trace the lands now held under lease by the Jackson-Walker company to their original owner, the Atchison, Topeka & Santa Fe R.R. Taking another tack, it also inquired into the action officials of District 14, United Mine Workers, in placing Jackson-Walker mine No. 17 on the unfair list a few days before the Industrial hearing was scheduled.

In explanation of the terms by which lessees are required to deliver to Jackson-Walker all coal produced by them on land leased from the Jackson-Walker company, or pay a royalty of 40c. a ton to sell it in the open market, C. P. A. Clough, president of the Jackson-Walker company, told the court his concern had contracted with the Santa Fe R.R. to deliver to it its entire production upon demand. Until the last year, he said, the Santa Fe had taken 85 per cent of the coal produced by the Jackson-Walker company and its lessees, and though installation of oil burners in Santa Fe locomotives had cut this demand considerably, his company was forced to protect its contract by continuing to control the output from its lands.

Firms leasing from Jackson-Walker declared the 40c. royalty made it impossible for them to compete in the open market, and, as a result, when the Jackson-Walker demand slackened they were compelled to close down.

J. H. Keefe, president of the Pittsburg & Cherokee Coal & Mining Co., from which the Jackson-Walker company leases, testified that majority stock in his concern is held in trust by the Central Trust Co., New York, for the Santa Fe R.R. Mr. Keefe also testified that \$100,000 of the \$225,000 paid by Mr. Clough for control of the Jackson-Walker company last winter was lent Mr. Clough by the Santa Fe Land Development Co., majority stock in which also is held by the railroad. Jackson-Walker stock was security for the loan, he said.

Passing to the union's placing Jackson-Walker Mine No. 17 on the unfair list, William Bogartz, president of District

14, examined relative to the union's purpose, admitted that union officials expected miners employed in the mine to cease work. This terminated the court's inquiry, but the district board withdrew its order a few days later, following a conference between its representatives and representatives of the operators, at the instigation of members of the International board.

The Industrial Court has given no date for the announcement of the results of its investigation.

World's Coal Output Higher in 1922 Despite Strike in United States

Although preliminary estimates of the production of coal in the United States in 1922 show a marked decrease as a result of the five-months miners' strike, the world's coal production of 1,208,000,000 metric tons in that year showed an increase of 72,000,000 tons, or 6 per cent, over the output in 1921, according to W. I. Whiteside, of the U. S. Geological Survey. Production in the United Kingdom has risen to the level of the early war years, and this increase counterbalance's not only the falling off in the United States but that in other countries. Although Germany lost (beginning in June) about 70 per cent of the Upper Silesian coal production to Poland, so that the Polish output was about three or four times as much as in former years, the total in Germany for the year shows an increase over the output of 1920 and hardly 5,000,000 tons less than that of 1921. The Netherlands lignite industry, which in 1920 had reached an output of almost 1,500,000 tons, has now practically if not entirely ceased.

The following table shows the trend of the world's production for the last 13 years, and the percentage of the annual total produced in the United States:

Year	Production in Part Estimated	Per Cent Produced by United States	Year	Production, in Part Estimated	Per Cent Produced by United States
1910	1,160,000,000	39.2	1917	1,325,000,000	44.6
1911	1,189,000,000	37.9	1918	1,331,000,000	46.4
1912	1,249,000,000	38.8	1919	1,168,000,000	43.1
1913	1,342,000,000	38.6	1920	1,319,000,000	45.3
1914	1,207,000,000	38.7	1921	1,136,000,000	40.4
1915	1,189,000,000	40.6	1922	1,208,000,000	34.6
1916	1,257,000,000	42.7			

The term "coal" as used by the Geological Survey includes

lignite, and the production for the world is simply the total of quantities reported, no attempt being made to reduce the statistics for inferior coals to an equivalent tonnage of coals of higher rank. Where possible, however, coal and lignite are shown separately.

The preliminary statistics of the world's coal production given in the Geological Survey's weekly report No. 295 have been revised and are given in greater detail in the following table. Attention is especially called to the change in Canadian figures. The Dominion Bureau of Statistics now compiles the mineral statistics of Canada, and its figures, which differ somewhat from those published by the Canadian Department of Mines, have been used in this table, in order that subsequent figures may be comparable. The production in countries from which reports had not been received by June 6, 1923, represents only about 3 or 4 per cent of the total, and as estimates for these countries have been included, the margin of error in the total as given is perhaps not over 2 per cent. The table will be revised as final official data are received.

COAL PRODUCED IN PRINCIPAL COUNTRIES OF THE WORLD
IN CALENDAR YEARS 1920, 1921 AND 1922

(In Metric Tons of 2,204.6 lb.)

Country	1920	1921	1922
<i>North America</i>			
Canada { Coal.....	12,020,531	10,684,259	10,561,140
{ Lignite.....	3,353,234	2,975,598	3,087,642
Greenland.....	2,308	2,200	(a)
Mexico.....	(a)	(a)	(a)
United States { Anthracite.....	81,282,000	82,076,000	47,613,000
{ Bituminous and lignite	515,883,000	377,316,000	370,033,000
<i>South America</i>			
Argentina.....	(a)	(a)	(a)
Brazil.....	(a)	(a)	(a)
Chile.....	1,063,185	1,275,117	1,046,378
Colombia.....	(a)	(a)	(a)
Peru.....	361,075	345,481	(a)
Venezuela.....	30,377	(a)	(a)
<i>Europe</i>			
Austria { Coal.....	132,864	137,633	166,540
{ Lignite.....	2,408,865	2,478,862	3,109,926
Belgium.....	22,388,770	21,750,410	21,234,170
Bulgaria.....	757,250	911,664	985,640
Czechoslovakia { Coal.....	11,143,221	11,648,399	9,906,261
{ Lignite.....	19,943,258	21,050,712	18,942,920
France { Coal.....	24,293,000	28,243,000	31,157,984
{ Lignite.....	967,800	735,600	757,633
Germany { Coal.....	140,766,397	145,610,000	141,204,600
{ Lignite.....	111,887,694	123,011,000	137,207,125
Greece.....	197,454	134,000	(a)
Hungary.....	4,963,060	6,148,560	7,117,910
Italy { Coal.....	151,862	114,236	197,920
{ Lignite.....	1,571,735	1,026,035	704,600
Netherlands { Coal.....	4,115,629	4,243,000	4,475,000
{ Lignite.....	1,395,851	121,715	0
Poland.....	6,660,145	7,842,553	4-23,800,000
Portugal.....	169,165	135,732	(a)
Rumania.....	1,570,393	1,791,224	(a)
Russia.....	6,137,000	9,851,000	10,000,000
Spain { Coal.....	5,420,704	5,012,229	(a)
{ Lignite.....	552,425	408,674	(a)
Spitsbergen.....	130,000	210,000	316,000
Sweden.....	439,584	376,692	(a)
Switzerland.....	74,590	10,714	(a)
United Kingdom:			
Great Britain.....	233,106,377	165,781,404	255,891,786
Ireland.....	109,845	89,958	(a)
Jugoslavia.....	3,412,361	2,949,103	(a)
<i>Asia</i>			
British India.....	18,250,508	19,511,154	19,000,000
China.....	19,484,896	19,876,375	21,300,000
Chosen.....	293,675	(a)	(a)
Federated Malay States.....	251,896	304,156	(a)
Indo China.....	700,267	920,900	1,000,000
Japan (including Taiwan and Karafuto) /	30,550,625	27,418,000	26,000,000
Russia.....	1,537,000	2,384,100	2,000,000
Turkey.....	2700,000	(a)	(a)
<i>Africa</i>			
Algeria.....	7,793	9,541	8,855
Belgian Congo.....	2,000	2,990	(a)
Nigeria.....	183,013	216,262	112,563
Rhodesia, Southern.....	524,796	521,404	467,787
Tunis.....	31,331	22,207	270
Union of South Africa.....	10,408,497	10,339,044	8,822,760
<i>Oceania</i>			
Australia:			
New South Wales.....	10,887,991	10,966,621	10,346,572
Queensland.....	1,127,727	970,087	1,100,000
Tasmania.....	76,640	67,543	70,000
Victoria.....	614,632	603,618	600,000
Western Australia.....	469,436	476,341	450,000
British Borneo.....	(a)	(a)	(a)
Dutch East Indies.....	1,095,718	1,212,665	(a)
New Zealand.....	1,873,296	1,838,131	(a)
Philippine Islands.....	58,888	(a)	(a)
Total.....	1,319,100,000	1,136,000,000	1,208,000,000

(a) Estimate included in total. (b) Includes the Saar. (c) Includes entire output of Upper Silesia for January-May, for June-December only that part of Upper Silesia allocated to Germany. (d) Includes for June-December that part of Upper Silesia awarded to Poland. (e) Estimated on incomplete data. (f) Exclusive of lignite from Japan (annual production of about 200,000 tons), for which estimate is included in total.

Fewer Anthracite Mine Employees in 1922

Employees in and about the anthracite mines decreased slightly in number in 1922. Final returns from the producers of anthracite to the U. S. Geological Survey (including those in the Bernice Basin of Sullivan County) show a total of 156,849 men employed, a decrease, when compared with 1921, of 1.6 per cent. The reports offer no explanation of the cause of the decrease, but it seems probable that the effect on operations of the unsettled conditions that prevailed for some time after the settlement of the general strike during the summer months must have limited for a time the number of men that could be employed. The decrease was general at mines and breakers, but owing to the demand for coal to fill the shortage brought about by the strike the washeries employed a greater number of men than in 1921.

The average number of days worked by the mines and breakers was 151, a decrease of 121 days from the record for 1921, which may perhaps be attributed almost entirely to the strike. In this respect also the washeries benefited by the shutdown of the mines, and the average number of days of operation increased from 118 in 1921 to 136 in 1922. The days worked by dredges decreased from 176 to 169. These are weighted averages that take into account the number of men employed at each individual operation.

The mines in the Lehigh and Schuylkill regions were operated almost exactly the same number of days—157 and 156 respectively—while those in the Wyoming region worked 147 days. The working time for washeries averaged 136 days, and for dredges, 169 days.

MEN EMPLOYED AND DAYS WORKED IN THE PENNSYLVANIA ANTHRACITE REGION IN 1922.

Region	Average Number of Men Employed				Total	Average Number of Days worked
	Surface	Miners etc.	Other	Underground		
<i>Lehigh:</i>						
Freshly mined coal.....	6,160	8,127	5,647	13,774	19,934	157
Washery product.....	228	.....	.....	.....	228	99
Dredge product.....	18	.....	.....	.....	18	125
	6,406	8,127	5,647	13,774	20,180	156
<i>Schuylkill:</i>						
Freshly mined coal.....	15,448	20,909	12,038	32,947	48,395	156
Washery product.....	1,016	.....	.....	.....	1,016	130
Dredge product.....	311	.....	.....	.....	311	174
	16,775	20,909	12,038	32,947	49,722	155
<i>Wyoming:</i>						
Freshly mined coal.....	18,436	43,163	23,909	67,072	85,508	147
Washery product.....	678	.....	.....	.....	678	156
Dredge product.....	19	.....	.....	.....	19	131
	19,133	43,163	23,909	67,072	86,205	147
<i>Sullivan County:</i>						
Freshly mined coal.....	256	328	158	486	742	113
Total freshly mined coal ()	40,300	72,527	41,752	114,279	154,579	151
Total washery product....	1,922	.....	.....	.....	1,922	136
Total dredge product....	348	.....	.....	.....	348	169
Grand Total.....	42,570	72,527	41,752	114,279	156,849	151

(a) Includes comparatively small number of washery employees who could not be separated from breaker employees.

A better measure of the effect of the great strike may be gained from the table below, which shows by regions the number of days lost through strikes and the number of men involved during 1922. It was reported that a total of 142,442 men were on strike for 138 days on the average during 1922. Part of the days lost were due to local strikes before and after the general strike, but in the main the losses were brought about by it. Computed on the basis of total employees, the average loss per man employed was 125 days.

STRIKES AND LOCKOUTS IN THE PENNSYLVANIA ANTHRACITE REGION, 1918-1922.

District	1918		1919		1920		1921		1922	
	Days	Men	Days	Men	Days	Men	Days	Men	Days	Men
Lehigh.....	2	1,092	4	6,518	15	15,666	18	10,847	137	19,066
Schuylkill.....	4	9,945	4	4,212	17	41,945	5	5,523	137	41,893
Wyoming.....	4	7,785	8	24,409	23	39,229	17	35,747	138	80,753
Sullivan Co.....	2	468	.....	.....	.....	.....	.....	.....	144	730
	4	19,290	7	35,139	19	96,840	16	52,117	138	142,442

Statistics compiled by H. L. Bennit, U. S. Geological Survey, July 21, 1923.

High Lights in Governor Pinchot's Address to Miners and Operators

This controversy between the miners and the operators of the anthracite field is not a private quarrel. The general public is a party to this controversy, and its rights, as well as the rights of the two other parties, must be represented and recognized.

A shortage of anthracite means not only a huge loss of profits to the operators—not only a huge loss of wages to the miners—but it means also loss of health among millions of American families, loss of comfort, of working power and of time.

A strike or suspension such as now threatens is a public calamity, and as such every reasonable public means must be used to prevent it.

The interest of the public in the settlement of this

controversy is double. In the first place, the public wants it settled. It is utterly wrong that the people should be called upon again to bear the enormous and most oppressive burden of a shortage of anthracite coal.

The public interest demands that this controversy shall be settled, and that a suspension of anthracite mining shall be avoided. The thing is possible—and it must be done.

Settlement means that neither side can get everything it would like to have. Few people ever do in the world we live in. But the settlement of this dispute is absolutely necessary for the public safety and welfare. The public needs and must have coal, and I am entirely confident that the public is going to have it.

Governor Pinchot Assumes Rôle of Anthracite Mediator

Mine Workers Issue Strike Call—Lewis Denies Report That Bituminous Miners Will Walk Out in Sympathy—Promises Operators "Most Complete Trouncing of Their Lives"

HARRISBURG, PA., Aug. 28.—Possibility of a joint session of the delegates representing anthracite operators and miners late this afternoon or tomorrow loomed big today following a conference Governor Pinchot had with the four operators at his office at the Capitol. The Governor is holding three conferences today, and the fourth, while a possibility, would not be discussed by him.

"I have discussed the case of the operators with them this morning as I did that of the miners yesterday," said the Governor, following his talk of the situation with the four producers today. I am to see both sides again this afternoon, the operators at 4 and the miners at 2." The operators were closeted with the Governor for two hours and a half and as they left the executive department they refused to disclose anything that had transpired there. The Governor continued his reticence relative to the discussion and when asked regarding the possibility of a joint session following two separate sessions with each side, said he had nothing to say.

The presence of W. B. Colver, of the Federal Trade Commission, in Harrisburg was commented upon and the Governor said: "A number of persons with special knowledge which might be useful in the present circumstances have come to this city, some by invitation and some not. As I have said before, I will counsel with anyone and everyone I can reach who can contribute from any angle to the discussion of this proposition." The Governor said that John Hays Hammond, chairman of the Federal Coal Commission, had loaned him several experts and these here today were: W. E. Fisher, David L. Wing, R. A. Walter, F. G. Tryon and Joseph H. Willits, experts in wage scales, cost production, and other matters.

The Governor also has invited here two experts representing the trade unions and two representing the anthracite operators. These experts are working with Dr. Clyde L. King, Secretary of State. There are other experts here watching the proceedings and working with the delegates. Following the organization of the new giant power board today the experts who have been invited to attend that session will also confer with Dr. King and the federal experts.

In an effort to effect a peaceful settlement of the anthracite strike situation, Governor Pinchot of Pennsylvania on Aug. 27 addressed representatives of the operators and miners, presenting a plan for separate conferences with him at the Capitol at Harrisburg. This was agreed to by both sides at an open meeting attended by the operators and the miners and numerous state officials. The Governor at this opening session of the parley outlined the entire situation. While optimistic that a way out of the difficulty, which threatens a general strike throughout the anthracite district on Saturday, can be found, he withheld suggestions of

methods by which the impending strike might be averted.

He said he recognized the rights of both operators and miners and added that the "general public is a party to this controversy and its rights as well as the rights of the other two parties must be represented and recognized." He was acting, he said, as the representative of the Commonwealth and in his capacity as Governor.

The operators at the conference were S. D. Warriner, president of the Lehigh Coal & Navigation Co., Philadelphia; W. J. Richards, president of the Philadelphia & Reading Coal & Iron Co., Pottsville; W. W. Inglis, president of the Glen Alden Coal Co., Scranton, and A. B. Jessup, vice-president of the Jeddo-Highland Coal Co., Jeddo. For the miners there were present Thomas Kennedy, Hazleton, president of District No. 7, United Mine Workers; C. J. Golden, Shamokin, president of District No. 9; Rinaldo Capellini, Hildale, president of District No. 1, and Philip Murray, Pittsburgh, international vice-president of the United Mine Workers, representing President John L. Lewis.

At the opening session there were present in addition to the authorized representatives of the operators and miners other operators and other mining officials, statisticians and representatives of several scale committees.

The first of the separate conferences was held Monday afternoon, when for three hours the Governor went over the situation in great detail with the representatives of the miners. At the conclusion of this session the Governor announced that a second conference would be held the following day, after he had conferred with the operators. These latter met with the Governor Tuesday morning from 9 a.m. until noon.

Wholly apart from the Governor's public statement and the meeting with the miners' leaders in his chambers, was a session of more than twenty federal, state and local experts at which the practical details of a possible compromise were being worked out.

The Governor in effect is forming his own "fact-finding commission" in an effort to hammer out a practical solution and avert a strike which is but three days away. It is rumored generally that a wage increase of from 5 to 10 per cent will be suggested as the first essential to a compromise settlement.

John L. Lewis, International president of the United Mine Workers, on Aug. 27 transferred his headquarters from Atlantic City to the Bellevue-Stratford Hotel, Philadelphia.

With the selection of Governor Pinchot as mediator by President Coolidge, negotiations between the anthracite operators and miners' representatives took a new turn. Early in the week the subcommittee of operators and union leaders had discontinued their conferences at Atlantic City

because of their failure to agree on the wage demands and the refusal of Mr. Lewis and his associates to accept arbitration of all eleven demands.

At about the time that the appointment of Governor Pinchot as mediator was announced, it was made public at Atlantic City that a statement would be transmitted to the union locals in the coal fields not later than Aug. 28 "containing the rules governing the suspension that automatically will take place on Sept. 1."

The announcement from the miners that plans had been ratified for the suspension of work on Sept. 1 was made by Vice-President Murray. It read:

"The full scale committee met this afternoon and discussed the breaking off of negotiations with the anthracite operators. The committee instructed the subcommittee to prepare a statement containing the rules governing the suspension that automatically will take place Sept. 1.

"This statement will be printed and sent to the local unions in the anthracite coal fields not later than Tuesday of next week and will cover all men, including maintenance men, members of our organization employed in and around the anthracite coal fields.

"The statement will provide specifically, however, that maintenance men be continued at work, provided the anthracite operators invite the mine workers to confer to make a satisfactory agreement governing these men.

"This is the first time in the history of joint relationship that negotiations have been broken off and the operators have not requested the mine workers to supply them with maintenance men. It is not the purpose of union mine workers to furnish the anthracite operators with maintenance men after Sept. 1 unless they ask for them and are willing to make a satisfactory agreement governing their conditions of employment.

"In years gone by we have always effected a joint understanding governing the employment of maintenance men during a suspension."

James Marks, vice-president of District No. 2, United Mine Workers, had a conference with President Lewis at Atlantic City on Aug. 23, which gave rise to reports that it was probable that the bituminous coal workers would go out on strike in sympathy with the anthracite workers. This was later denied by Mr. Lewis, who declared that the union never breaks a contract.

It was hoped that when the anthracite operators and union leaders resumed their wage conferences at Atlantic City on Aug. 20 they would make progress toward a settlement of their differences on the demands of the mine workers. Two days was spent in deliberations and then, failing to agree, another adjournment was taken and the secretary of the joint committee of operators' and mine workers' representatives was instructed to notify the U. S. Coal Commission of the failure to reach an agreement.

After the adjournment on Aug. 21, John L. Lewis promised the operators "the most complete trouncing of their lives." Mr. Lewis said the break resulted from the operators' refusal to consider a wage increase while the operators said the miners' refusal to agree to arbitration was the cause.

Operators' and miners' representatives at the reconvening of the conferences on Aug. 20 immediately took up the demand for an advance of 20 per cent for contract workers and \$2 a day for day workers. Mr. Lewis stood firmly for the increase while Mr. Warriner, for the operators, as strongly opposed it, saying it would mean higher prices.

After adjournment on Aug. 20 Mr. Lewis declared the miners got no satisfaction from the operators and made it plain to the newspapermen that they had not receded from their position on the check-off.

The demand for an increase in wages was renewed at the session the following day, and when it was refused by the operators the latter offered a resolution for the renewal of the present contract to expire March 31, 1925, which was refused by the miners. This was followed by a resolution by the operators offering to submit all eleven demands to arbitration and that the findings be retroactive to Sept. 1, which likewise was voted down by the miners. A motion by the miners to adjourn was rejected by the operators.



GOING UP?

From the New York World

The operators then submitted a resolution that the secretary be instructed to advise the U. S. Coal Commission of the status of the negotiations, and that the sub-committee hold itself in readiness for consideration of such suggestions as they may make. The miners voted "no" on it, but a resolution directing the secretary to notify the U. S. Coal Commission of the status of the negotiations and that the committee adjourn to meet at the call of the secretary was unanimously adopted.

Experts Gather Facts for Pinchot

Facts in connection with points at issue in the anthracite wage dispute are being gathered for Governor Pinchot under the direction of his confidential adviser, Secretary of State Clyde H. King, formerly professor of economics of the University of Pennsylvania. Those who are furnishing information to the Governor include W. B. Colver, Robert W. Bruère, director of the Bureau of Industrial Research of New York; Royal S. Meeker, former Commissioner of Labor Statistics of the U. S. Department of Labor and recently head of the Labor Bureau of the League of Nations at Geneva; W. Jett Lauck, economic adviser to the railroad brotherhoods and to the mine workers; the Right Rev. Michael J. Hoban, Roman Catholic Bishop of Scranton; William Rauschenbusch, author of a book on coal; Joseph J. Walsh, Secretary of the State Department of Mines, and F. G. Tryon, Samuel W. Tater and David L. Wing, statisticians in the employ of the U. S. Coal Commission.

C. L. Poston Dies After Long Illness

Clinton L. Poston, aged 76, a well-known Ohio coal operator died Aug. 23 at Athens, Ohio, after an illness of more than three years. He was one of the last of the old-time operators who amassed a fortune in the coal fields of the Hocking Valley. He was born at Nelsonville in 1847 and was the son of L. D. Poston, who was interested in coal lands for years. After attending the Ohio State University, in 1867 he took charge of business for his father until 1873, when he and his brothers formed a partnership under the name of Poston Bros., to conduct the mining business. In 1881 his brothers sold out and in 1893 Mr. Poston purchased the interests of the outside partners. He was actively connected until 1902, when he relinquished a number of his activities. Later he became interested in Pittsburgh No. 8 field under the name of the Morris-Poston Coal Co., and still had interests in that field at the time of his death.

Wadleigh Gives Governors His Emergency Plan For Coal Distribution

Representatives of the Governors, among them several Governors themselves, of eleven anthracite-consuming states met in New York on Tuesday, Aug. 28, at the invitation of Federal Fuel Distributor Wadleigh, to discuss the best means of handling the emergency in the event that the anthracite mine workers go on strike Sept. 1. Among the Governors present were Cox, of Massachusetts; Flynn, of Rhode Island, and Proctor, of Vermont. General Goethals represented Governor Smith of New York. Interstate Commerce Commissioner Aitchison sat with Mr. Wadleigh, who presided as chairman.

Mr. Wadleigh opened the meeting by telling the Governors of the limitation in the powers of his office, and that the act creating the Federal Fuel Distributor provided that such powers as it conferred shall not extend beyond Sept. 22, 1923. The so-called Brydon plan of emergency distribution of soft coal was discussed and it was pointed out by Mr. Wadleigh that in one important aspect the soft-coal operators' proposal is not feasible. The Brydon plan contemplates that the government set the prices at which bituminous coal shall not be sold during the emergency. The Federal Fuel Distributor or no other federal agency has power to fix the price of coal.

After some discussion of the possibilities of working out some plan the soft-coal operators were invited into the meeting. Mr. Brydon informed them of the plan which he had worked out, which in brief contemplates that so far as possible the ordinary channels of distribution shall not be disturbed, and that an emergency supply of coal would be obtained through a special organization that would have representatives in each anthracite-consuming state to act in conjunction with the state authorities and consumers. He announced that S. L. Yerkes, of Birmingham, would be asked to take general direction of production and distribution.

Mr. Brydon called particular attention to the fact that his emergency plan is designed to deal effectively with a serious emergency where the ordinary channels of purchase and distribution prove insufficient for the effective supplying of the needs of the public, and is predicated "on the government determining that there existed such an actual or threatened shortage in the supply that it was desirable to fix prices by governmental action rather than leaving them to the ordinary processes of competition." He added: "Under existing laws no emergency organization of the operators can itself undertake to agree on or fix prices even for the purpose of keeping prices down in the absence of governmental co-operation. Therefore, until the government may deem the emergency such as to justify it in fixing prices by the method used during the strike of 1922, or otherwise, or will give its sanction to some other method, it would be impossible for any emergency organization of operators itself to receive and place orders for the purchase of coal."

The assistance of the soft-coal operators was offered to the Governors, to wholesalers, retailers and consumers by way of giving information as to the use of soft coal as a substitute for anthracite and the sources of available supply.

Representatives of the petroleum industry were present, and Mr. Welch, secretary of the Petroleum Institute, read a prepared statement pointing out the advantages of oil for household heating. He suggested that the larger homes be equipped with oil-burning apparatus, leaving the supply of anthracite available to those who could not afford the high initial cost of installation. He refused to make any prophecy as to the future price of oil and stated that on present costs of coal and oil material savings in operating expense would be realized by those who use oil.

Several of the state representatives asserted that retail dealers are exceedingly reluctant at this time to buy bituminous coal because of the fear that if there is no strike they will be left with the soft coal in their yards and that eventually they will have to sell it at a loss.

There was spirited debate toward the close of the session between Mr. Ainey, representing Governor Pinchot of Pennsylvania, and Mr. Maloy, representing the Governor of Maryland, as to the proper form in which the assembled Governors and their representatives should express their willingness to co-operate with the Federal Fuel Distributor.

The resolution finally adopted by state representatives, which summarized the results of the meeting, simply pledged state governments to co-operate fully with the Federal Fuel Distributor in whatever plan he should propose, should the necessity for emergency action arise.

The meeting was held in the office of the Port Authority, No. 11 Broadway, New York, and at the outset the press and representatives of the coal trade were excluded. Railroads were represented by their coal traffic managers.

Commission Appraises Hard-Coal Situation

The Coal Commission on Aug. 24 issued a statement summarizing the situation with respect to supply and stock of anthracite and appraising the condition of the country in the event that there is a prolonged strike in the hard-coal fields. The statement follows:

"In the first place, the anthracite mines to date have maintained so high a rate of shipment that by Sept. 1 over 25,000,000 net tons of domestic sizes of anthracite will be in the possession of the consumers or dealers. This supply, representing shipments from April 1 to Aug. 31, is over 7,000,000 tons more than was distributed by Dec. 31 last year and only about 17,000,000 tons less than the average supply on Dec. 31 of the three years previous to the strike year.

"Any complete stoppage of anthracite mining on Sept. 1 would thus involve a deficit of 17,000,000 tons of domestic sizes to be made up before the end of December, or a million tons a week. Indeed, with the present high rate of shipments continuing through this month, the supply on hand would be nearly 2,500,000 tons above the average on Sept. 1, and a real deficit would not exist until after two weeks of shutdown. To that degree is the anthracite-consuming territory prepared to face the threatened strike.

"However, the Sept. 1 stocks of household fuel are not equally distributed and the many households without any anthracite would be forced to prepare for winter by accepting some substitute.

"While, as was true last winter, some byproduct and bee-hive coke will be available, perhaps at a rate of from 100,000 to 200,000 tons a week, the principal substitute must be bituminous coal.

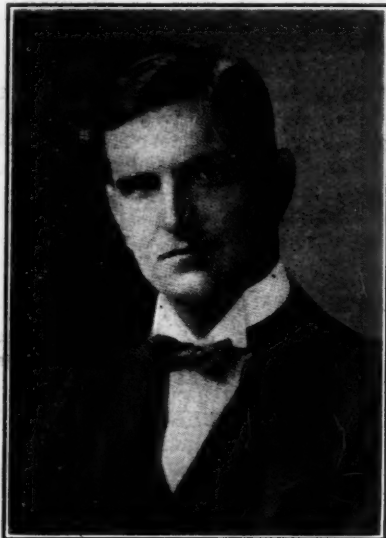
"To sum up the situation: In the event of an anthracite strike, a household fuel emergency would exist in the Eastern United States which the bituminous operators believe could be promptly met by utilizing the excess mine capacity of the bituminous fields normally shipping steam coal to New England, Canada and the Atlantic seaboard. The united effort of soft-coal operators, railroad executives and the Interstate Commerce Commission would probably be in the line of starting this movement of coal before the period of maximum freight movement, for which the railroads are reported to be in excellent condition to handle.

"Stoppage of anthracite mining would be a public emergency to meet which would require the full co-operation of the consumers with the soft-coal operators and all the agencies of distribution, with all the aid possible through executive action by federal and state governments. If those who now control the mining and distribution of anthracite are to continue to think only of their own demands and not at all of the public's demand for coal, the Coal Commission feels that every measure should be taken to supply the domestic fuel needed in the homes of the great mass of the consumers and especially of the industrial workers throughout the East."

Coming of Hodges Recalls Reported Co-operative Strike Agreement

Frank Hodges, secretary of the Miners' Federation of Great Britain, according to a newspaper dispatch, is on his way to Canada, and later will confer with John L. Lewis, president of the United Mine Workers of America, and his associates in Indianapolis. When Lewis recently visited Europe he saw Hodges and shortly after the former's return to the United States it was reported that an agreement in principle had been reached between the two leaders to co-operate in the event of a strike in either country. In view of the wage negotiations now on between the anthracite operators and miners Mr. Hodges' visit at this time has an added significance.

Soon after Mr. Mr. Lewis' return from Europe he was a witness before the U. S. Coal Commission but gave no intimation that there was an agreement between Mr. Hodges and himself. At about the same time Attorney General Daugherty, whose attention had been called to the newspaper articles, sent a letter to the U. S. Coal Commission stating that it would be a violation of the laws of this country if the alleged agreement, whereby British coal diggers would not mine coal for shipment to the United States during a strike here and whereby the American union would conduct itself similarly during a strike in the British Isles, had been entered into.



FRANK HODGES

Enjoin Roads and I. C. C. in Joint Mine Case

The U. S. District Court for the Southern District of West Virginia has granted a permanent injunction against the Chesapeake & Ohio R.R., the Virginian Ry., the United States of America and the Interstate Commerce Commission in Equity No. 1276, commonly called the Joint Mine Case. The decision restrains the carriers involved from putting into effect the Interstate Commerce Commission decision which provided that joint mines could not obtain more cars than local mines. The Court says the restraining order is only meant to hold that circular CS-31, Rule 4 (Revised) is erroneous and the action of the carriers in putting it in force must be enjoined and that an order will be entered without prejudice to the Interstate Commerce Commission making proper orders relative to reasonable car distribution to joint as well as local mines not in conflict with the Court's view, which is that the Commission's decision is not in accordance with the law. The Interstate Commerce Commission intends to appeal the court's ruling to the U. S. Supreme Court.

Federal Bureaus at Variance on New Mine

Considerable interest has been aroused in Washington by the conflict between the attitudes of the Interstate Commerce Commission and the Interior Department toward opening new coal mines. The commission recently denied the Virginian Ry. permission to build a branch line 1.19 miles in length in Wyoming County, W. Va., to reach a proposed coal mine, saying at one place in its decision: "There are at present more mines in the country than is consistent with the most efficient use of carriers' equipment, and their aggregate capacity exceeds greatly the country's demand."

The Commission asserted that the Virginian Ry. had not been able to give a sufficient car supply to the mines already operating along its lines and dependent upon it.

While one government agency thus gives what appears to be a general declaration that too many coal mines are in existence in the country, the Department of the Interior has announced the sale at public auction of mineral rights to 1,840 acres of public land in Fayette County, Ala. The coal rights were purchased by Moss & McCormick, of Birmingham, who paid a cash bonus of \$85,000, with a pledge to spend \$75,000 for improvements on the property within three years and to guarantee the government a royalty of 10c. per ton per annum on a minimum production of 20,000 tons of coal, the stipulations meaning that the coal must be mined.

J. H. Barnes Sees Menace to Fundamental Of American Industrial Relations

Julius H. Barnes, president of the Chamber of Commerce of the United States, issued a statement Aug. 26 on the anthracite situation, declaring that the public will place the blame and condemnation upon the party which refuses to submit their cause to determination by an impartial tribunal. "The coal situation, to my mind," said Mr. Barnes, "has assumed unusual importance because in its present aspect this question has assumed a challenge to a fundamental principle of American industrial relations."

"Now, if it is true that in this dispute there has been on the part of the operators an unreserved offer to submit the questions to impartial arbitration, and if that offer has no conditions which tend to render it unfair or partial in any degree; and if that offer has been flatly refused, then we are, as I said, to the point of a challenge to the principle on which organized society preserves its orderly existence. There has developed, moreover, a feeling that the public has an interest in the settlement of wage disputes and of relations between workers and their employers on such a scale as this such as has not been generally recognized."

"It is now realized that a settlement which grants unfair demands on either side and is reimbursed by a public price levied on every consumer is not a fair settlement, in an article of such common use and of such a character as to assume almost the character of a monopoly. Therefore there is an unusual significance in the direct issue, stripped of all other technicalities, as to whether, in this great industry, the question of the relations between workers and employers is to be subject to the determination of an impartial tribunal, in which the public interest also will be considered, or whether one side or the other shall impose its will brutally upon the other, and the public pay the cost."

"Here is no attempt to weigh the merits of the case, one side or the other, but an attempt to define to the public the clear issue in this case: Shall an industrial dispute, when all other means of conference and discussion have failed, be submitted to the determination of unprejudiced tribunals, or shall the public see its interest jeopardized by a contest of violence and relative strength? In such a case the public, having learned the facts, will attach the blame and visit their condemnation, effective or futile as it may later prove to be, upon the party which refuses to submit their cause to such determination."

Let Coal Contracts for Ohio Institutions

The Ohio Board of Purchase has awarded contracts for 73,900 tons of coal for seventeen state institutions. The awards, based on bids submitted about a month ago, cover 23,900 tons of mine-run at prices ranging from \$1.63 to \$1.79 per ton. The awards on mine-run were made on nine lots, the smallest 900 tons, three lots of 2,000 tons, two lots of 2,500 tons, three lots of 4,000 tons.

Awards also were made for 50,000 tons of nut, pea and slack. The lowest figure was \$1.01 per ton on 6,000 tons. There were 19,000 tons awarded at \$1.10, 2,500 tons at \$1.14, 5,000 tons at \$1.18, 6,000 tons at \$1.19, 3,000 tons at \$1.25 and 6,000 tons at \$1.45. All but two of the companies obtaining the awards have headquarters in Columbus.

Still Hopeful of Peace in Anthracite Field, Washington Prepares to Provide Substitutes if Necessary

Entrance of Governor Pinchot into the anthracite situation came Aug. 24, when the Pennsylvania executive reached Washington and lunched with President Coolidge. Chairman Hammond of the Coal Commission also was a guest. The Governor made it plain that he had come as the result of an invitation. At the White House it was stated that the federal government was abandoning nothing to the state in this movement, but that the object was co-operation between the state and the federal governments. It was reported, without confirmation, that Secretary Hoover had suggested that the Pennsylvania Governor be asked to see what he could do to restore harmony, anthracite production being almost wholly within that state. To assist the Governor at his conference with the operators and miners at Harrisburg, the Coal Commission sent to that city F. G. Tryon and several others of its staff.

Official Washington entered the last week of August outwardly optimistic that there would be no cessation of work in the anthracite mines at the end of the month, when the existing agreement will expire, but confessedly basing this feeling upon deduction and not upon assurances from those connected with the production of hard coal.

While hopeful of peace in the anthracite fields, preparations went forward to provide communities which normally consume anthracite with substitutes in the form of bituminous coal and coke in the event that work in the anthracite collieries should cease Sept. 1.

Eyes were turned expectantly Monday toward Harrisburg, where Governor Pinchot was scheduled to meet representatives of the anthracite miners and operators in an effort to bring about an agreement whereby anthracite production would not be interrupted.

WADLEIGH TO MEET GOVERNORS IN NEW YORK

F. R. Wadleigh, Federal Fuel Distributor, left Washington Sunday for New York, where he had invited governors of Eastern anthracite-consuming states to meet him, in person or through representatives, Tuesday to discuss plans for sending into those states soft coal and coke in the event that shipments of anthracite should cease.

According to Mr. Wadleigh's invitation, which was issued August 22: "An important subject to be discussed will be the matter of education of the consumer in the use of fuels other than anthracite, as it is felt that a systematic plan of public instruction can be made of great service in the practical and efficient use of such fuels and will thereby reduce the actual cost of heating, with resultant savings to the individual consumer and the community." In this connection attention has been directed to "Comparative Tests of By-product Coke and Other Fuels for House-Heating Boilers," by Henry Kreisinger, John Blizzard, H. W. Jarrett and J. J. McKitterick, which was issued as Technical Paper No. 315 of the Bureau of Mines, last May.

The termination of the Atlantic City conference between representatives of the anthracite operators and miners Aug. 21 after only two days of a resumption of negotiations following the meeting with the Coal Commission served somewhat to lower the optimistic feeling in Washington, but did not destroy it. John Hays Hammond, chairman of the Coal Commission, immediately reported to President Coolidge, and has been in daily conference with the President since.

Members of the Coal Commission felt that they had nothing further to offer toward bringing together the anthracite groups, having laid the situation before the two sides at the New York meeting. It was stated by Chairman Hammond that the promised report fixing responsibility as between the operators and the miners probably would not be submitted to the President until after Aug. 31, in the event that there was continued failure to reach an agreement.

Nowhere in official Washington was weight given newspaper speculation as to the possibility of a walk-out in the

bituminous fields which are unionized in the event of cessation of operations in the anthracite fields. This speculation is minimized in Washington. It was pointed out, for one thing, that a strike of soft-coal miners would be unauthorized by the United Mine Workers of America, in the face of their contract in the bituminous fields, which does not expire until next April, and that men ceasing work under these circumstances would not receive strike payments from the union treasury.

At a conference of members of the Coal Commission with newspaper correspondents Friday, Chairman Hammond made a detailed statement of the reasons which he said caused him to feel optimistic over the situation.

Summed up, these are that a cessation of operations would prove costly to the operators, because their mines would have to be maintained in readiness to resume work whenever an agreement should be reached, while the market for their product for at least this winter would be destroyed, and possibly much of it taken away permanently by substitutes, while for the miners there would be unemployment during the period the mines were not producing, with possibly a reduction of employment thereafter if the market for anthracite were injured, as expected.

"But," said Chairman Hammond, "before the world war all intelligent men said that such a war would be impossible; yet it came. And I have known intelligent men to run amuck and I have known intelligent men to commit suicide."

Former Vice-President Marshall called attention to the fact that the price of anthracite has reached almost the breaking point, and that it is already a "luxury fuel."

Commission members stated that by Sept. 1 there will be in consumers' bins or in the hands of dealers 25,000,000 tons of domestic sizes of anthracite and that a supply of 1,000,000 tons of substitutes weekly will maintain the situation until Dec. 31. Unfortunately, Chairman Hammond stated, the supply in consumers' bins is not evenly distributed, so that the lack will fall most severely upon the poor who have not been able to lay in their stocks.

Competition, if nothing else, will keep the price of substitutes from mounting to dizzy heights, Chairman Hammond said. Bituminous coal mines have been operating only about 60 per cent of capacity, owing to lack of market, and the operators probably would be glad of an opportunity to increase this percentage at the same margin of profit.

Julius H. Barnes, president of the United States Chamber of Commerce, issued a statement Sunday pointing out that the anthracite miners have rejected arbitration offered by the operators, which, he said, was "a challenge to a fundamental principle of American industrial relations."

The Coal Commission last week made public a report on "Cost of Production of Anthracite Coal," by David L. Wing and James E. Black, of its staff, the data having been used in a previous report by the Commission.

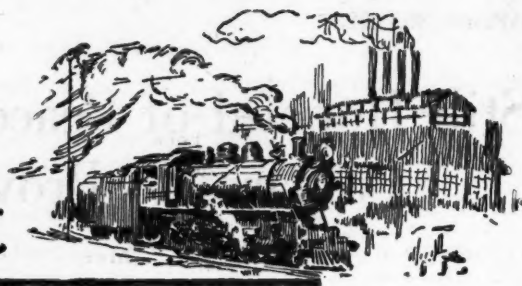
Searles Opposes Soft-Coal Emergency Plan

Ellis Searles, editor of the *United Mine Workers Journal* and personal representative of John L. Lewis, International president of the miners' union, has made an oral statement to John Hays Hammond, chairman of the United States Coal Commission, which is understood to have been in opposition to the bituminous operators' plan to supply the nation's fuel needs in an emergency such as would be brought about if the anthracite miners go on strike next month. No statement was forthcoming from the Commission on the matter.

ON ORDER OF THE DEPARTMENT OF THE INTERIOR the use of black blasting powder has been entirely discontinued in the Matanuska coal field in Alaska. Explosives listed as permissible by the Department of the Interior have been substituted in all operations.



Production and the Market



Weekly Review

Despite the uproar in the press over the possible effect of an anthracite strike on the bituminous-coal market, there is as yet little evidence of any effect on prices. It is true that throughout the Middle West the usual autumn buying of domestic soft coal has begun several weeks earlier than usual, but whether this is due to the threatened hard-coal strike or to a week of unusually cool weather in August is not clear.

Prices of soft coal advanced slightly here and there last week, and producers and shippers are talking about still higher prices for September deliveries. *Coal Age* Index of spot prices of bituminous coal at the mines advanced to 202 on Aug. 27 compared with 197 the previous week. The corresponding average price was \$2.44, a gain of 6c. in the week. The steam-coal market picked up in sympathy with the domestic grades west of the Alleghanies and in Pittsburgh. Practically every market, except New England, registered some degree of improvement in inquiry and buying. Where prices did not actually advance the market stiffened up with very little coal available at the lower prices quoted.

OUTPUT GAINS; TRANSPORTATION HOLDS UP

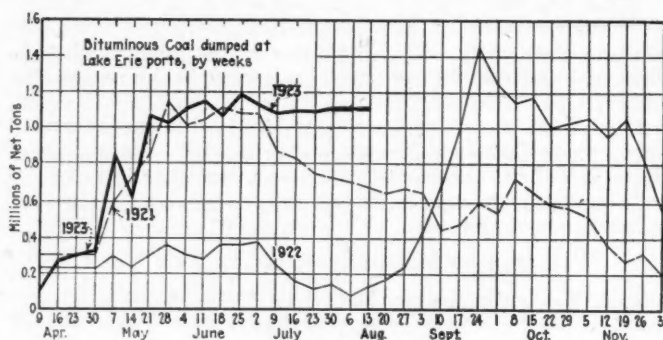
Production is increasing and unless car shortage develops the higher rate of output will soon flatten out the better prices that are in prospect. There are practically no reports of transportation shortage or difficulty in delivery of either hard or soft coal. There is less distress coal in every market and accumulations of "no bills" are disappearing. The market for smokeless is better in the West and has slumped notably at tide, mainly because New England is not buying.

The Lake movement is slowing up because the docks are nearly full of coal. The total Lake movement of bituminous coal to date this year exceeds any previous record for a like period of time. The total dumpings to Aug. 20 were 17,877,000, exceeding by more than 2,000,000 tons the record of 1921.

New England has been taking coal at a high rate this

year, the record showing 127,000 cars shipped all rail into that market from Jan. 1 to Aug. 18, exceeded only by 1918 and 1920. The water movement to New England in the first seven months of this year was 7,267,000 gross tons, exceeded for a like period only in 1918. Buying of soft coal in New England is now only in small tonnages and there is only lukewarm inquiry for coal next month. Constant pressure is required to induce customers to take monthly quotas on contract. The railroads in New England are now receiving the bulk of the soft coal.

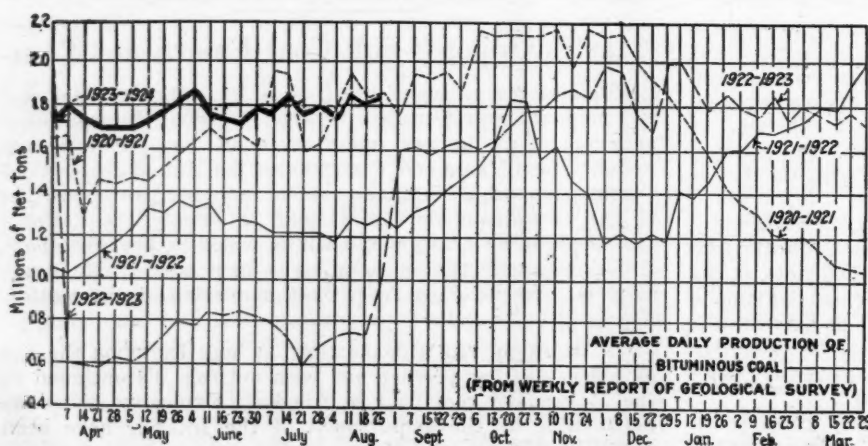
Production of anthracite dropped off about 200,000 tons in the week of Aug. 18 but passed the 2,000,000-ton



LAKE COAL DUMPED
(Net Tons)

	Week Ended Aug. 20	Season to Aug. 20
Cargo	935,882	16,955,167
Fuel	54,022	859,828
Totals	989,904	17,814,995

mark again last week. It is estimated by the government that more than 25,000,000 net tons of domestic sizes of anthracite will be in the hands of consumers or dealers by Sept. 1. This supply is some 7,000,000 tons more than was distributed by Dec. 31 last year and only about 17,000,000 tons less than the average supply to Dec. 31 in recent years. A strike of the anthracite



AVERAGE DAILY PRODUCTION OF
BITUMINOUS COAL
(FROM WEEKLY REPORT OF GEOLOGICAL SURVEY)

Estimates of Production

(Net Tons)

	1922	1923
BITUMINOUS		
Aug. 4 (b)	4,313,000	10,564,000
Aug. 11 (b)	4,606,000	9,853,000
Aug. 18 (a)	4,609,000	10,813,000
Daily average	768,000	1,802,000
Calendar year	216,823,000	345,662,000
Daily av. cal. year	1,109,000	1,772,000
ANTHRACITE		
Aug. 4	29,000	2,018,000
Aug. 11	40,000	1,735,000
Aug. 18	38,000	1,858,000
Calendar year	23,542,000	64,427,000
COKE		
Aug. 11	112,000	327,000
Aug. 18 (a)	120,000	336,000
Calendar year	3,970,000	12,528,000

(a) Subject to revision. (b) Revised from last report.

miners on Sept. 1 would thus leave a deficit of about 1,000,000 tons a week to be made up by substitutes, of which coke would furnish between 100,000 and 200,000 tons per week and bituminous coal the remainder.

Prices of furnace and foundry grades of beehive coke are up 25c. this week. The sharp recovery in the beehive coke market in the past three or four weeks is due to production and consumption being again in adjustment, if indeed production is not somewhat short of consumption. In July furnaces were blowing out, and ovens were not blown out quick enough, leaving some stocks to be absorbed and temporarily depressing the market. Apparently consumption is now equal to absorbing both the stocks and the current production.

Chicago Short of Smokeless

Conditions have changed for the better around Chicago. There are plenty of orders for every size domestic coal. Prices are holding firm to the circular and "no bills" are being rapidly cleaned up. Screenings also show im-

provement. West Virginia smokeless is becoming scarce in this city and Illinois and Indiana domestic sizes as a result are readily bringing the circular prices. Central Illinois domestic coal is in fair demand and western Kentucky is gaining in price.

No anthracite is now reaching Chicago and the present stocks will not last more than two weeks under normal conditions. Consumers are reconciling themselves to the fact that there will be a shortage of anthracite should there be no strike, and are considering substitutes.

Production is a little better than a week ago in the Southern field, following last week's evidence of a revival in the market. Central Illinois showed no material improvement, however.

There is no change in the Mt. Olive field. Production is low and demand has shown little improvement. Operators generally are carrying large amounts of no-bills and prices on domestic sizes range \$2.75@3.25 with steam egg quoted at \$2.25, steam nut \$2, mine-run \$2.20 and screenings \$1.35. In the Standard field an improvement in demand for domestic sizes is noted, but some operators are experiencing difficulty in moving steam sizes.

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

Low-Volatile, Eastern					Midwest				
	Market Quoted	Aug. 21 1922	Aug. 13 1923	Aug. 20 1923	Aug. 27 1923†		Market Quoted	Aug. 21 1922	Aug. 13 1923
Smokeless lump.....	Columbus.....	\$6.10	\$5.85	\$5.85	\$5.75@6.00	Franklin, Ill. lump.....	Chicago.....	\$3.90	\$3.90
Smokeless mine run.....	Columbus.....	6.00	3.00	3.00	2.75@3.25	Franklin, Ill. mine run.....	Chicago.....	2.85	2.85
Smokeless screenings.....	Columbus.....	5.90	2.35	2.35	2.25@2.50	Franklin, Ill. screenings.....	Chicago.....	1.65	1.65
Smokeless lump.....	Chicago.....	6.85	5.75	5.75	6.25@6.50	Central, Ill. lump.....	Chicago.....	2.60	2.60
Smokeless mine run.....	Chicago.....	6.25	3.00	3.00	3.25@3.50	Central, Ill. mine run.....	Chicago.....	2.10	2.10
Smokeless lump.....	Cincinnati.....	5.75	6.00	6.10	6.00@6.25	Central, Ill. screenings.....	Chicago.....	1.35	1.35
Smokeless mine run.....	Cincinnati.....	5.50	2.75	3.00	3.00@3.50	Ind. 4th Vein lump.....	Chicago.....	3.35	3.35
Smokeless screenings.....	Cincinnati.....	5.15	2.85	2.75	2.50@3.00	Ind. 4th Vein mine run.....	Chicago.....	2.60	2.60
*Smokeless mine run.....	Boston.....	8.70	5.60	5.30	5.00@5.15	Ind. 4th Vein screenings.....	Chicago.....	1.60	1.55
Clearfield mine run.....	Boston.....	7.60	2.35	2.35	1.90@2.50	Ind. 5th Vein lump.....	Chicago.....	2.85	2.75
Cambria mine run.....	Boston.....	8.75	2.85	2.85	2.50@3.25	Ind. 5th Vein mine run.....	Chicago.....	2.10	2.10
Somerset mine run.....	Boston.....	8.00	2.60	2.60	2.25@2.75	Ind. 5th Vein screenings.....	Chicago.....	1.45	1.40
Pool 1 (Navy Standard).....	New York.....	3.25	3.05	3.00	3.00@3.50	Mt. Olive lump.....	St. Louis.....	3.00	3.00
Pool 1 (Navy Standard).....	Philadelphia.....	3.45	3.40	3.40	3.00@3.25	Mt. Olive mine run.....	St. Louis.....	2.00	2.00
Pool 1 (Navy Standard).....	Baltimore.....	8.00	2.45	2.55	2.25@2.75	Mt. Olive screenings.....	St. Louis.....	1.50	1.50
Pool 9 (Super. Low Vol.).....	New York.....	8.25	2.75	2.75	2.40@2.70	Standard lump.....	St. Louis.....	2.40	2.40
Pool 9 (Super. Low Vol.).....	Philadelphia.....	2.50	2.50	2.50	2.50	Standard mine run.....	St. Louis.....	1.85	1.85
Pool 9 (Super. Low Vol.).....	Baltimore.....	7.50	2.25	2.20	2.00@2.50	Standard screenings.....	St. Louis.....	1.05	1.00
Pool 10 (H.Gr. Low Vol.).....	New York.....	8.00	2.30	2.30	2.00@2.35	West Ky. lump.....	Louisville.....	6.00	2.30
Pool 10 (H.Gr. Low Vol.).....	Philadelphia.....	7.75	2.25	2.25	2.25@2.30	West Ky. mine run.....	Louisville.....	6.00	1.65
Pool 10 (H.Gr. Low Vol.).....	Baltimore.....	6.50	1.80	1.85	1.75@2.25	West Ky. screenings.....	Louisville.....	6.00	1.05
Pool 11 (Low Vol.).....	New York.....	7.75	1.96	1.85	1.70@1.90	West Ky. lump.....	Chicago.....	6.00	2.10
Pool 11 (Low Vol.).....	Philadelphia.....	7.75	2.05	1.90	1.90	West Ky. mine run.....	Chicago.....	6.00	1.30
Pool 11 (Low Vol.).....	Baltimore.....								
High-Volatile, Eastern					South and Southwest				
Pool 54-64 (Gas and St.).....	New York.....		1.75	1.75	1.60@1.95	Big Seam lump.....	Birmingham.....	4.25	3.50
Pool 54-64 (Gas and St.).....	Philadelphia.....	6.60	1.85	1.75	1.65@2.00	Big Seam mine run.....	Birmingham.....	4.25	2.00
Pool 54-64 (Gas and St.).....	Baltimore.....	7.50	1.75	1.85	1.85	Big Seam (washed).....	Birmingham.....	4.25	2.35
Pittsburgh se'd gas.....	Pittsburgh.....		2.65	2.80	2.85@3.00	S. E. Ky. lump.....	Chicago.....	6.15	3.10
Pitts. gas mine run.....	Pittsburgh.....		2.05	2.05	2.40@2.50	S. E. Ky. mine run.....	Chicago.....	6.00	1.80
Pittsburgh mine run (St.).....	Pittsburgh.....		1.55	1.55	1.50@1.60	S. E. Ky. lump.....	Louisville.....	5.90	2.85
Pittsburgh slack (Gas).....	Pittsburgh.....		6.40	3.00	2.85@3.25	S. E. Ky. mine run.....	Louisville.....	5.75	1.75
Kanawha lump.....	Columbus.....	6.25	1.85	1.85	1.75@2.00	S. E. Ky. screenings.....	Louisville.....	5.65	1.00
Kanawha mine run.....	Columbus.....	6.00	1.05	1.05	1.00@1.15	S. E. Ky. lump.....	Cincinnati.....	5.90	3.10
Kanawha screenings.....	Cincinnati.....	5.35	3.00	3.25	3.25@3.75	S. E. Ky. mine run.....	Cincinnati.....	5.75	1.60
W. Va. lump.....	Cincinnati.....	5.35	1.60	1.70	1.65@1.85	S. E. Ky. screenings.....	Cincinnati.....	5.10	1.10
W. Va. Gas mine run.....	Cincinnati.....	5.50	1.60	1.70	1.65@1.85	Kansas lump.....	Kansas City.....	4.00	4.00
W. Va. Steam mine run.....	Cincinnati.....	5.10	1.05	1.05	1.10@1.35	Kansas mine run.....	Kansas City.....	3.25	3.25
W. Va. screenings.....	Columbus.....	6.65	2.75	2.75	2.50@3.00	Kansas screenings.....	Kansas City.....	2.60	2.60
Hocking lump.....	Columbus.....	6.25	1.85	1.85	1.75@2.00				
Hocking mine run.....	Columbus.....	5.75	1.10	1.10	1.00@1.20				
Hocking screenings.....	Columbus.....	6.10	2.55	2.60	2.30@3.00				
Pitts. No. 8 lump.....	Cleveland.....	6.10	2.05	2.05	2.10@2.15				
Pitts. No. 8 mine run.....	Cleveland.....	6.10	1.25	1.20	1.30@1.40				
Pitts. No. 8 screenings.....	Cleveland.....								

* Gross tons, f.o.b. vessel, Hampton Roads.

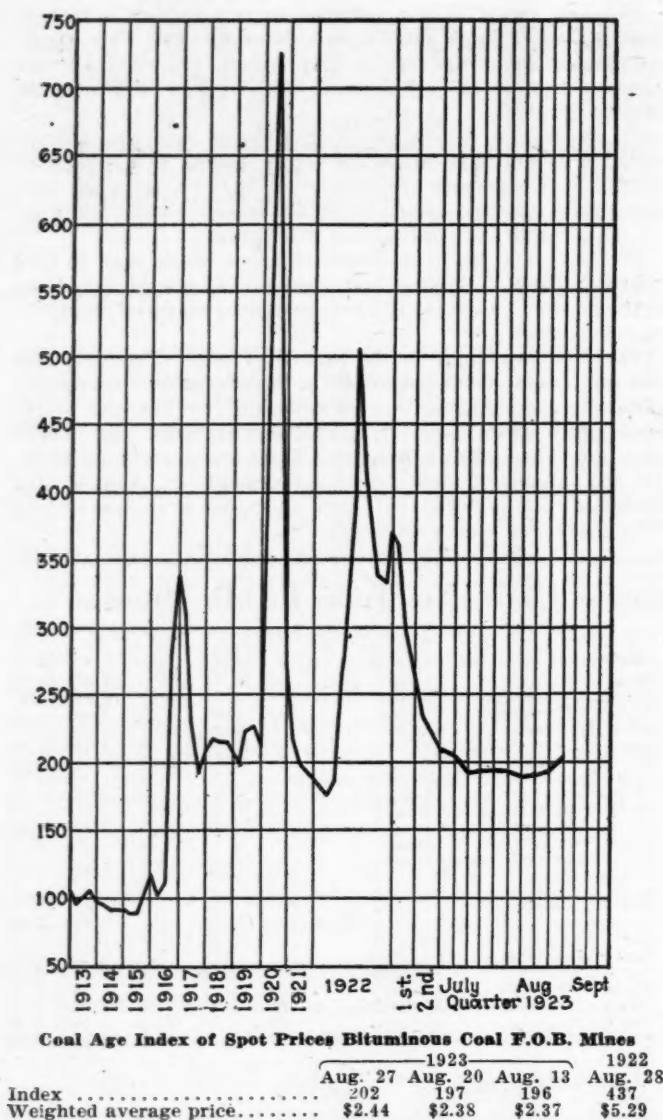
† Advances over previous week shown in heavy type, declines in italics.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

	Market Quoted	Freight Rates	Dec. 26, 1922		Aug. 20, 1923		Aug. 27, 1923†	
			Independent	Company	Independent	Company	Independent	Company
Broken.....	New York.....	\$2.34	\$9.00	\$7.75@8.25	\$7.75@8.35	\$7.75@8.35	\$7.75@8.35	\$7.75@8.35
Broken.....	Philadelphia.....	2.39		7.90@8.10	7.90@8.10	7.90@8.10	7.90@8.10	7.90@8.10
Egg.....	New York.....	2.34	9.25@12.00	8.00@8.35	8.50@12.50	8.00@8.35	\$8.50@13.00	8.00@8.35
Egg.....	Philadelphia.....	2.39	9.25@11.00	8.10@8.35	9.25@11.00	8.10@8.35	9.25@11.00	8.10@8.35
Egg.....	Chicago.....	5.06	12.50@13.00	7.20@8.25	8.50@12.00	7.25@7.45	8.50@12.00	7.25@7.45
Stove.....	New York.....	2.34	9.25@12.00	8.00@8.35	8.50@13.00	8.00@8.35	8.50@13.50	8.00@8.35
Stove.....	Philadelphia.....	2.39	9.25@11.00	8.15@8.35	9.25@11.00	8.15@8.35	9.25@11.00	8.15@8.35
Stove.....	Chicago.....	5.06	12.50@13.00	7.35@8.25	8.50@12.00	7.25@7.45	8.50@12.00	7.25@7.45
Chestnut.....	New York.....	2.34	9.25@12.00	8.00@8.35	8.50@12.50	8.00@8.35	8.50@13.00	8.00@8.35
Chestnut.....	Philadelphia.....	2.39	9.25@11.00	8.15@8.35	9.25@11.00	8.15@8.35	9.25@11.00	8.15@8.35
Chestnut.....	Chicago.....	5.06	12.50@13.00	7.35@8.35	8.50@12.00	7.25@7.45	8.50@12.00	7.25@7.45
Ranges.....	New York.....	2.34		8.25	8.30			8.30
Pea.....	New York.....	2.22	7.00@11.00	6.15@6.30	6.75@8.50	6.00@6.30	6.75@8.50	6.00@6.30
Pea.....	Philadelphia.....	2.14	7.00@8.00	6.15@6.20	7.00@7.50	6.15@6.20	7.00@7.50	6.15@6.20
Pea.....	Chicago.....	4.79	7.00@8.00	5.49@6.03	7.00@8.50	5.30@5.65	7.00@8.50	5.30@5.65
Buckwheat No. 1.....	New York.....	2.22	4.00@5.00	4.00@4.10	3.00@3.50	3.50@4.15	3.50	3.50@4.15
Buckwheat No. 1.....	Philadelphia.....	2.14	5.00	4.00	3.50	3.50	3.50	3.50
Rice.....	New York.....	2.22	3.00@3.25	2.75@3.00	2.25@2.50	2.50	2.50	2.50
Rice.....	Philadelphia.....	2.14	2.50@2.75	2.75@3.00	2.50	2.50	2.50	2.50
Barley.....	New York.....	2.22	1.75@2.00	1.50@2.00	1.25 1.50	1.50	1.50	1.50
Barley.....	Philadelphia.....	2.14	1.00@1.75	2.00	1.50	1.50	1.50	1.50
Birdseye.....	New York.....	2.22		2.10	1.60			1.60

* Net tons, f.o.b. mines.

† Advances over previous week shown in heavy type, declines in italics.



This diagram shows the relative, not the actual, prices on fourteen coals, representative of nearly 90 per cent of the bituminous output of the United States weighted first with respect to the proportions each of slack, prepared and run-of-mine normally shipped, and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke, 1913, 1918," published by the Geological Survey and the War Industries Board.

St. Louis Has No Interest in Strike Talk

Owing to cooler weather and more favorable unloading conditions, dealers are finding it easier to move their tonnages with a slight increase in the domestic demand. As usual, this early demand is for southern Illinois domestic sizes. The threatened strike in the anthracite fields has had no effect on the demand for anthracite in the St. Louis market. Dealers are well supplied, in view of which late buyers are showing little or no interest in the matter of their supply. Very little demand for smokeless or coke has appeared locally. There is an increased demand from country points for both southern Illinois and Standard coals with no change in local retail prices.

The fall season is making itself felt on the western Kentucky market. Operators are holding prices more firmly and there is a marked reduction in distress coal.

Louisville Market Unsettled

Guessing as to future conditions, especially as to the effect of the anthracite situation, if a strike materializes, has disturbed this market. A lot of operators, claiming to be sold up for a week or ten days, are not especially in need of business, and are only quoting the high side of the market quotation range, and in some cases adding 25 to 50c. to even that price for September delivery.

It is reported on good authority that some of the operators in southeastern Kentucky, in the Straight Creek and Jellico fields are quoting \$3.75@4 a ton on prime block coal, but \$3.50 appears to be the top of the market on such coal in the Louisville district, and not much block from eastern Kentucky is selling above \$3.25, with some sales made at around \$3. Western Kentucky prices are firmer on the local market, and as some operators are fairly well sold up, quotations are firmer. Industrial buying is better, especially in the South.

Soft Coal Declines in Northwest

The rush for anthracite which has been on in the Northwest for some time has finally spread to the cities, which have been quite backward until lately. The hard-coal situation is fairly satisfactory in the Twin Cities. There has been received this season at Lake Superior ports in the neighborhood of 800,000 tons of hard coal—perhaps two-thirds to three-quarters of an ample supply for a full winter, depending on its severity.

The fight for business has brought about some very low figures on Illinois coals, and the quotations named are more or less nominal, ranging from around \$3.50 down to \$3 at the mine as the exigency seems to require. Kentucky coal is going into the local market on the same policy of "get the business," with prices even lower than the Illinois figures.

The anthracite market is active in Milwaukee, for if there is a strike Milwaukee faces the prospect of pulling through the coming winter with only half of its normal supply of hard coal. There is anthracite on the docks for six weeks or two months under normal demand, but a general rush of orders would soon wipe out the supply. Receipts of soft coal by lake are slowing down, due to the fact that there is little storage room left on the docks.

Cargo receipts at Milwaukee up to date aggregate 575,710 tons of anthracite and 1,755,920 tons of soft coal. These figures match up fairly well with the receipts during the corresponding period of 1921. The outlook is that the docks will go into the winter with more than a normal supply of soft coal and more than enough to meet any deficiency in anthracite.

Soft-coal prices have taken another drop at Duluth. Prices of Youghiogheny and Hocking, which are indicative of the general trend, are off \$1 from the opening price this year. Pocahontas is off \$2. Anthracite holds firm and is in much demand.

Screenings are a drug on the market. Dock men are not anxious to hold them any longer than necessary and buyers feel that there may be further reductions before the weather gets really cold. There is much interest in substitutes for hard coal and a demand is evident for Pocahontas.

The Southwestern market continues steadily, if somewhat slowly, to improve. Few mines closed early in the summer have been reopened, but those that were kept in operation through the summer are working three days a week.

Utah operators are gaining steadily on working time, now averaging three days a week. Prices remain the same as last week. Slack is moving at a fair pace and bringing an average of \$1.25 at the mine. Utah production in July was 355,000 tons compared with 374,934 in that month last year.

Strike Talk Stiffens Cincinnati Market

Strike talk and a blast from John L. Lewis seem to breathe more strength into the Cincinnati market than any other known invigorative. Within the past week there has been a general righting of sails and business took on the biggest spurt of activity since last March or April.

There have been material advances in prices by operating companies who are filled up with business for August and who are going slow about taking on more business than can be cared for in the next couple of weeks. Slack showed the best improvement of the bituminous while domestic lump also has picked up.

River business has been favored by rains but artificial means to get the barges down is still in use. With the exception of slack there has been no change in Cincinnati

retail prices—which are: Smokeless lump, \$10.50@ \$11; mine-run, \$7.75@ \$8.25; bituminous lump, \$7.50@ \$8.50; slack, \$5@ \$5.50.

Production in the Hocking, Cambridge, Jackson and Pomeroy fields is about 20 to 25 per cent. The No. 8 field, on the other hand, made a new record for a week's production with 460,000 tons the week ended Aug. 18, which is about two-thirds capacity.

Transportation facilities continue ample, cars being available to the extent that they are ordered—practically a 100-per cent car supply. No market as a factor is diminishing.

Bituminous coal receipts at Cleveland during week ended Aug. 18 show a slight decrease from the preceding week, which was heavy. Total arrivals were 1,812 cars, divided 1,299 for industries and 513 for retailers.

Coke Prices Advance

On a general average in the Pittsburgh field mine-run and lump steam and gas are up about 10c. in the week, with steam slack up 5c. and gas slack no stronger. Youghiogheny gas lump, quotable up 15c. last week, has advanced about 10c. more to a range of \$2.85@ \$3. At the moment most of the business is going at close to \$2.85. Gas mine-run is quotable at \$2.40@ \$2.50, or 5c. advance, while gas slack is \$1.50@ \$1.60 and not overly strong at that, so that if anything gas slack has weakened. Steam mine-run, quotable lately at \$2.00@ \$2.15, with but little doing at under \$2.10, is now fairly steady at \$2.15@ \$2.25. While the advance on paper is 10 to 15c. the increase in average realized prices at 5@ 10c. Steam lump is slightly higher, at \$2.40@ \$2.50. Steam slack is quotable again at \$1.30@ \$1.40, having recovered the 5c. loss reported a week ago.

The spot coke market has advanced about 25c. in the week. Furnace coke, quotable a week ago at \$4.50@ \$4.75, according to grade, is now at \$4.75 as minimum, with a number of sales known to have been made at \$4.90 and conjectures that \$5 had been paid in a few cases, while the usual asking price is \$5.

Interest Lukewarm in New England Market

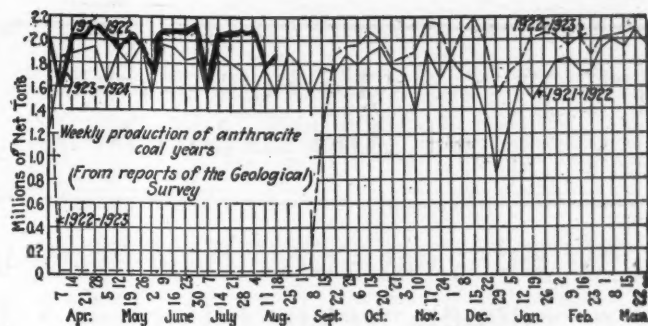
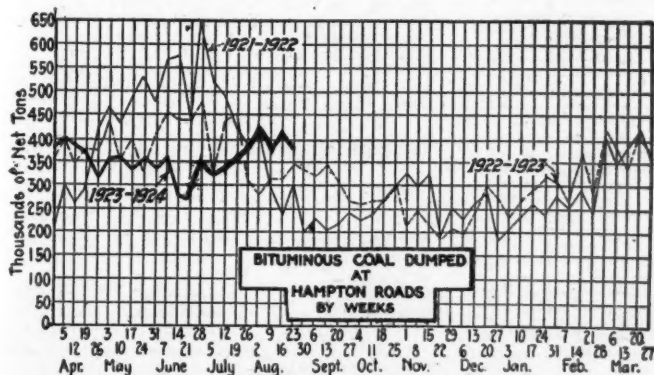
The prospect in New England for screened coal is not encouraging. Accumulations at Hampton roads are heavier than at any time since June and quotations are softer than even a week ago. No. 1 Navy standard coal has sold down to \$5 per gross ton f.o.b. vessel, and while there were sales early in the week at \$5.25 the range is now \$5@ \$5.15. Pool 2 coals have sold within a few days at less than \$5.

Practically all the shippers from central Pennsylvania need business for September and while there is little disposition to operate at less than cost there is reason to suppose that distress coal may soon put in an appearance at the New York and Philadelphia piers. The railroad terminals already have on hand more coal than loading orders call for and a marked falling off in tonnage is expected.

In connection with a possible anthracite tie-up much is being said about the use of bituminous as a substitute, but in this territory it will take a real emergency to induce even the dealers to take on any considerable reserve supply.

East Buys Welsh Anthracite

Inquiry for Welsh anthracite is growing and orders have been placed for New York delivery at close to \$12 New York harbor. One English firm reports having booked orders for about 100,000 tons of Welsh anthracite to points along the



Atlantic seaboard from Newfoundland to New York for shipment during September, October and the early part of November. Orders for shipment later than the early part of November have been refused. The largest portion of the tonnage already booked has been for Boston interests. Other shipments were reported as having been booked for New York delivery at around \$12.50 c.i.f. and for Boston at \$12.75@ \$13.50.

Export demand is quiet. Quotations for Pocahontas, New River and Kanawha gas coal showed declines from last week. No new business was reported in most quarters although Canada was reported as in the market for gas coals. A contract for 20,000 tons of Fairmont gas coal for French Railways was reported as having been closed with a New York house at \$6.50 c.i.f. Rouen, Nantes and LaPallice.

Interest in the soft-coal market in New York centered around screened and prepared bituminous coals as substitutes for anthracite last week. Inquiries were numerous and considerable business was placed.

Nearly all local houses reported inquiries for screened and prepared bituminous coal, as well as for coke. Quotations for high-volatile nut coal ranged \$2.50@ \$3.25 f.o.b. mine; low-volatile screened coals \$2.75@ \$3.25; Broad-top egg, stove and nut around \$5.30; low-volatile prepared coal, \$5.75@ \$8 and high-volatile screened coal \$6@ \$6.25.

All grades of coke were in strong demand and shippers reported many orders placed. Quotations ranged about as follows: Medium sulphur furnace, \$5.50 f.o.b. ovens; stove and egg, \$6.50@ \$7; nut, \$5.50@ \$6.50; run of oven, \$5@ \$5.50, and pea coke \$4.50@ \$5.

Dealers in Philadelphia are spreading around every car of anthracite received by cutting orders down. Their main object is to give all of their customers at least some coal to start with when the coal-burning season arrives.

The point has not yet been reached where the Philadelphia consumer is willing to take substitutes. This has always been a most difficult city in which to induce the consumer to take coke and bituminous in lieu of anthracite.

Steam sizes are still well sold, but all depends on the outcome on Sept. 1, for if work continues there will then be a surplus.

A slight increase in export coal movement has come at Baltimore following the slump of two weeks ago. The amount exported for the week ended Aug. 18 was approximately six times greater than that shipped from this port to foreign countries during the week previous. There also was one coke shipment cleared during the first-named period.

The coal trade in Birmingham is still suffering from a lack of satisfactory demand for commercial coal. Consumers are buying a few cars at a time where dependent on the spot supply and are not taking care of their needs beyond the immediate future. Trade in bunker or export is very quiet.

Car Loadings, Surplusages and Shortages

	Cars Loaded	
	All Cars	Coal Cars
Week ended Aug. 11, 1923.....	973,162	177,259
Previous week.....	1,033,130	190,531
Same week in 1922.....	842,690	82,898

	Surplus Cars		Car Shortage	
	All Cars	Coal Cars		
Aug. 14, 1923.....	78,404	6,293	8,315	4,193
Same date in 1922.....	153,880	118,044		
Aug. 8, 1923.....	74,168	6,546	10,149	4,897

Foreign Market And Export News

British Coal Prices Hold at Steady Level, Though Welsh Outlook Is Unsettled

Though the outlook in Wales is unsettled, business is active enough to maintain prices at a steady level. The operators are cautious in view of the possibility of a strike in the United States anthracite field and also because of an intimation that Belgium is about to stop the export of coal. The Welsh pits have sold the bulk of their anticipated output for the next few months, and the operators, on the whole, are optimistic on the prospects for the rest of the year.

During the week ended Aug. 11 British collieries produced only 3,566,000 tons, according to the official reports, a decrease of 1,688,000 tons from the previous week's total of 5,254,000 tons. The falling off is accounted for by bank holiday week.

France and Italy are buying slowly, but business with Belgium, Spain and South America is good. The Great Northern Railway of Ireland is in the market for 50,000 tons of locomotive coal for delivery over the next six months, or alternatively 100,000 tons over the next twelve months.

The anthracite market is quiet, but heavy orders have still to be filled for Belgium and France. A steady business is being maintained with Canada.

The Newcastle market is quiet. The European situation is making itself felt and the Continent is buying slowly. Forward business is dull. Orders placed include Amsterdam gas works, 40,000 tons Durham gas coals for delivery August-November; Helsingfors gas works, 7,500 tons Wear special gas at 33s. c.i.f., delivery September-October; two orders for best steams at 31s. 9d. c.i.f.

French Imports of British Coal Fall Owing to Exchange Rate

During the last week arrivals of British coals in France showed a marked decrease, the reason being that actual quotations for such coals are absolutely prohibitive, owing to the rates

of exchange. There is a feeling that some other kind of fuel must be obtained to solve the problem, but this cannot easily be found.

On the whole the position of the French coal market remains unchanged. Offers of industrial coals practically meet the demand. The inquiry for house coals is quite dull for the time being and retailers are with difficulty replenishing their stocks for the coming winter.

Much interest is manifested in whether export permits for coal become operative in Belgium, as exportation is a vital point for Belgium, which is producing much more coal than she can ever have needs for. A meeting of the Charleroi collieries was to take place Aug. 27, with a small increase in prices likely to ensue. The men are coming back from the fields to the pits.

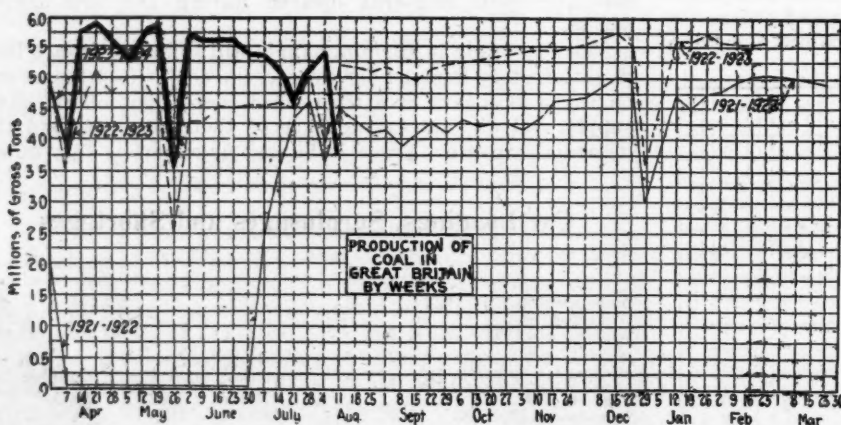
Reparation deliveries of fuel to France and Luxemburg improved during the latter part of July, the figures being coal, 182,300 tons; coke, 160,200 tons (17 per cent distributed to Luxemburg); lignite patent fuel, 6,300 tons, or a total of 349,700 tons, as against 465,300 tons for the month of June.

French supplies of coke for the first thirteen days of August have amounted to 51,000 tons or a daily average of about 3,920 tons. Should this continue, purchases of foreign cokes could then be avoided.

Coal Paragraphs from Foreign Lands

Assistant Trade Commissioner Charles B. Spofford, at Calcutta, reports the total output of coal in British India during 1922 to be 18,168,988 tons as compared with 18,358,934 tons in 1921.

A cable from Assistant Trade Commissioner W. E. Embry, at Santiago, to the Department of Commerce, at Washington, says that lower prices, together with lower freight rates, permit coal from the United States to compete successfully against Australian coal in Chile.



Export Clearances, Week Ended Aug. 25, 1923

FROM BALTIMORE	
For West Indies:	Tons
Am. Sch. Ellen Little	1,174
For Italy:	
Br. SS. Betwa	5,003
For France:	
Br. SS. Hinderstan	7,650

FROM HAMPTON ROADS	
For Italy:	
Ital. SS. Emanuele Accame, for	
Porto Farrajo	11,255
For Holland:	
Br. SS. Sunheath, for Rotterdam	7,886
For Spain:	
Br. SS. Nile, for Porto Vecchio	8,167
For France:	
Nor. SS. Mexicano, for a French	
Port	4,310
For Cuba:	
Nor. SS. Krosfond, for Havana	3,126
For West Indies:	
Br. SS. Manauki, for Kingston	3,278
For Holland:	
Br. SS. Turkestan, for Amsterdam ..	6,826

FROM PHILADELPHIA	
For Cuba:	
Nor. SS. Svartfond, for Havana	—

United States July Domestic Coal Exports

	Month of July	
	1922	1923
Coal		
Anthracite	16,698	455,370
Value	\$150,032	\$4,852,564
Bituminous	366,287	2,278,241
Value	\$2,011,523	\$11,679,570
Coke	27,686	60,462
Value	\$251,669	\$600,728
Seven Months Ended July		
	1922	1923
Coal		
Anthracite	1,020,830	2,827,629
Value	\$10,587,367	\$30,631,007
Bituminous	4,666,196	11,448,917
Value	\$24,395,672	\$65,695,204
Coke	194,688	738,003
Value	\$1,732,244	\$8,407,287

Hampton Roads Pier Situation

N. & W. Piers, Lamberts Pt.:		Aug. 16	Aug. 23
Cars on hand		1,443	1,476
Tons on hand		83,024	85,715
Tons dumped for week		177,636	114,392
Tonnage waiting		1,000	12,000
Virginian Ry. piers, Sewalls Pt.:			
Cars on hand		2,140	2,024
Tons on hand		122,560	115,140
Tons dumped for week		75,820	103,708
Tonnage waiting		0	14,963
C. & O. piers, Newport News:			
Cars on hand		1,815	1,515
Tons on hand		94,125	80,355
Tons dumped for week		110,437	129,590
Tons waiting		9,410	17,710

Pier and Bunker Prices, Gross Tons

PIERS			
	Aug. 18		Aug. 25†
Pool 9, New York.....	\$5.35@	\$5.75	\$5.25@ \$5.75
Pool 10, New York.....	5.00@	5.25	4.75@ 5.00
Pool 11, New York.....	4.65@	4.85	4.50@ 4.75
Pool 9, Philadelphia.....	5.30@	5.70	5.25@ 5.65
Pool 10, Philadelphia.....	4.55@	5.30	4.60@ 5.20
Pool 11, Philadelphia.....	4.15@	4.75	4.15@ 4.75
Pool 1, Hamp. Roads.....	5.15		5.25
Pools 5-6-7, Hamp. Rds.	4.90		5.00
Pool 2, Hamp. Roads.....	5.10		5.15
BUNKERS			
Pool 9, New York.....	5.65@	6.05	5.55@ 6.05
Pool 10, New York.....	5.30@	5.55	5.05@ 5.30
Pool 11, New York.....	4.95@	5.15	4.80@ 5.05
Pool 9, Philadelphia.....	5.65@	6.00	5.60@ 6.00
Pool 10, Philadelphia.....	4.90@	5.65	5.00@ 5.60
Pool 11, Philadelphia.....	4.35@	5.00	4.50@ 5.00
Pool 1, Hamp. Roads.....	5.25		5.25
Pool 2, Hamp. Roads.....	5.10		5.15

Current Quotations British Coal f.o.b. Port, Gross Tons

Quotations, by Cable to <i>Coal Age</i>			
	Aug. 18	Aug. 25†	
Admiralty, large.....	30s. @ 31s.	29s. @ 30s.	
Steam smalls.....	19s. @ 20s.	19s. @ 21s.	
Newcastle:			
Best steams.....	22s. 6d. @ 26s.	22s. @ 23s.	
Best gas.....	24s. @ 25s.	23s. @ 24s.	
Best bunkers.....	23s. @ 24s.	20s. @ 22s.	

† Advances over previous week shown in heavy type, declines in italics.

News Items From Field and Trade

ALABAMA

The Tennessee Coal, Iron & R.R. Co. plans erection of 350 bungalows at Fairfield.

The Alabama Iron & Coal Co., a Delaware corporation, dealers in coal, iron and other minerals and mineral rights, has established a branch office in Birmingham.

The I. O. Drewry Contracting Co. has purchased a large steam shovel for its stripping operations at Sunlight. This equipment weighs 340 tons and is capable of moving 500 cu. yd. of material per hour. The company also is constructing a 300-ton washery.

J. H. White, who has been district manager of the Senet-Solvay Co. for a number of years at Birmingham, has been promoted to the position of assistant manager of the coke department and will have headquarters in Syracuse, N. Y. Mr. White will be under A. F. Hilleke, formerly district manager at Birmingham but for several years general manager of the coke department of the corporation. It is announced that no one will be appointed to fill the position vacated by Mr. White, local superintendents at Ensley, Holt and Chattanooga reporting direct to the head officials at Syracuse.

C. P. Moore, who has been superintendent of the Empire Mines, formerly operated by the Empire Coal Co., but recently merged with the DeBardeleben Coal Corporation, has resigned his position at Empire and, effective Sept. 1, will become general manager of the Pratt Fuel Corporation, owned by the Walter Moore interests, formerly operating the Empire Mine.

COLORADO

The Canon District Coal Co. has been incorporated in Canon City, with a capital stock of \$50,000, by James L. Morgan and John Lippis.

ILLINOIS

The Paradise Coal & Coke Co. has resumed operations at Paradise after several weeks' shutdown for repairs.

Hanna City Mining Co., Peoria, has been incorporated with a capital of \$20,000. Incorporators, Cass F. Balm, L. E. Kauffman, J. F. Bartley.

Chicago Williamson Coal Co., Chicago, has been incorporated with a capital of \$10,000 to buy, sell and mine coal and other fuel. Incorporators, W. M. Stephenson, J. S. Bash, William J. Bash.

Mine No. 1 of the Wasson Coal Co., near Harrisburg, has resumed work after being idle since June 1. A new steel tippie was erected at the mine during the shutdown and is now practically completed ready for operations.

The Republic Coal & Coke Co. will handle the output of the recently organized Hanna City Mining Co., which has purchased the Hanna City mine of the Clark Coal & Coke Co. R. R. Ronk, of Peoria, is president of the Hanna City Co.; C. F. Salm, vice-president, and L. E. Kauffman, secretary and treasurer. Both Mr. Kauffman and Mr. Salm are connected with the Republic company.

Dr. F. C. Honnold, secretary of the Illinois Coal Operators' Association, is trying to obtain the endowment of a research scholarship in the college of engineering at the University of Illinois, to further advance the science of coal mining. In an announcement he states that the late Prof. H. H. Stoek had urged such action and that Professor Stoek's successor, Prof. A. J. Hoskins, is desirous of seeing it carried out. It is also brought forth in the circular that various industries, among them the electric, the steel, the telephone and the cement, are doing exactly the same thing with notable results. The scholarship would be in the form of a post-graduate scholarship and would cost \$600 a year. One-half of such a student's time would be devoted to research and the other half to his advanced studies. This is in line with the idea advanced by the Taylor Coal Co. of establishing endowments to put students through school with a view of developing technical mining engineers.

The Valler Coal Co., at Valier, has resumed work after a shut down of more than three weeks. Repairs and improvements were made about the plant during the intervening time.

INDIANA

Less than 73 per cent of the mines in the Terre Haute, Princeton and Sullivan coal fields are working as much as half time at present, according to a survey. The estimate was based on reports made on 128 mines in the field. A compilation of figures shows that during July American mine No. 1 of the Knox Consolidated Coal Co. hoisted the greatest tonnage—96,143 tons of coal. The mine was operated seventeen and one-half days. The best record for steady work was made by the Maumee Collieries mine No. 7, which operated 22½ of the 26 working days in the last month. The reports show that during July 1,219,628 tons of coal was mined at the three fields. Lack of orders was given as cause for the idleness of the mines.

Several thousand dollars damage was done at the Deep Vein mine between West Terre Haute and St. Mary of the Woods, Ind., recently when a fire, thought to have been caused by spontaneous combustion, burned away the entire tippie. Bruce Jeffers, top boss, was painfully injured in fighting the fire, by falling from the top of the tippie onto a pile of slack. A hose company was sent to the scene, but was handicapped by the lack of water at the mine. The supply in the cistern provided for fires was quickly exhausted and the city firemen were compelled to allow the fire to spread unhampered. The place has been idle for about a month.

A receiver for the Love Coal Co., Anderson, is asked in a complaint brought in the Superior Court by Charles L. Runyan Co., wholesale dealers in coal at Terre Haute. The Terre Haute firm alleges that the Love Coal Co. owes it \$10,000 and that a change in ownership was made without notice to creditors.

Star City Coal Mining Corporation, Indianapolis, has been incorporated with a capital of \$300,000; directors, Edward J. Boleman, Paul Kirk and Burrell Wright.

KENTUCKY

The Rowe Coal Co. has been incorporated in Madisonville by Lee S. Rowe, H. D. Rutledge and Daniel Kirkwood.

The Jerrico Coal Co. has been incorporated in Whitesville with a capital of \$50,000, by W. Minter, Memphis, Tenn.; B. D. Williams, Jr., and Dolph Woodruff, of Mannington, Ky.

Western Kentucky coal companies in an effort to give the Northwest the sizes of prepared coal desired, are spending a lot of money on rescreening plants and boom loaders. The Black Diamond Coal Mining Co., Drakesboro, Ky., has installed a plant, and placed it in operation. The Rockport Coal Co., Rockport, Ky., Pacific Coal Co., Mercer, Ky., Holt Brothers Mining Co., McHenry and the Gibraltar Coal Co., Central City, also have installed such systems. The latter company installed two, one at its Brownie mines and the other at its Gibraltar mines.

An interesting case was settled last week when Chancellor Davis W. Edwards handed down an opinion in litigation between the Louisville & Nashville R.R. and Charles S. Nield, president of the Edgemont Coal Co., the railroad being awarded judgment of \$11,482.57, less a credit of \$457.33. The suit dates back to 1914, over the building of a spur track by the railroad to the Edgemont Coal Co., properties in Bell County, the question argued being whether the coal company had entered a contract whereby it would pay cost of construction of the track, or a given part of it. A letter written by the late Milton H. Smith, president of the road, detailing the question of paying for the trackage, was construed by Judge Edwards as a contract, and he said that the letter had been accepted by the coal company, which would be bound by its provisions.

MICHIGAN

During July, 2,771,709 net tons of soft coal and 353,924 net tons of anthracite passed through the canals at Sault Ste. Marie. Of this tonnage 2,757,269 tons of soft coal and 349,424 tons of hard coal passed through the United States canal. The balance passed through the Canadian canal.

MISSOURI

The shaft for a new coal mine that is being sunk by Thomas Wood, west of Kirksville, is now down to 90 ft. The vein of coal is about 45 in. thick.

The Mendota Mining Co. has been incorporated in St. Joseph with a capital of \$200,000, to engage in the coal mining business, by B. C. Collins, J. J. Casey and J. H. Karnes.

A. E. Marriott and Evan Jones have obtained options on a tract of coal land near Higbee, and drilling machinery has been placed on the ground to test out the lease for the opening of a shaft. A switch will be built later to join that of the Walton Coal Co.

MONTANA

The Gilbert-Crawford Coal Co., of Round Up, is getting under way with a new property and expects to be shipping coal soon. This company was organized recently by Charles A. Crawford, formerly city passenger agent for the Northern Pacific at Helena, and Walter Gilbert of Minneapolis, Minn. Harry Bronstein, of Minneapolis, is one of the vice-presidents. Fred K. Huston, of Helena, is chief engineer and W. D. Hungate, of Helena, is secretary-treasurer.

NEBRASKA

What is said to be an extension of the coal fields of Kansas is believed to have been discovered near Auburn. A test well for oil was being sunk when the vein of coal was encountered. It is said to be large enough to warrant its mining on a paying basis.

NEW YORK

Sealed proposals will be opened, by the Superintendent of Lighthouses, Staten Island, N. Y., 2 p.m., Sept. 7, 1923, for approximately 1,800 tons bituminous steam coal during October, November and December, 1923, in quantities as required, trimmed in vessels' bunkers under contractor's coal chute, New York Harbor. Information on application.

D. R. Lewellyn, Merritt, Price, Ltd. miners and shippers of Cardiff coals, have removed their offices from 44 Whitehall street to the 11th floor of the Whitehall Building, 17 Battery Place, New York City. The office is in charge of W. H. Kelynaek.

OHIO

After one week of existence under the title of the Swa-wood Coal Co., the name of this company has been changed to the Swain Coal Co., with practically the same personnel it started with. Its offices are in the Union Central Building, Cincinnati.

The Midvale Goshen Coal Co., of Cleveland, is erecting a complete steel four-track tippie at Wainwright. Roberts & Schaefer Co., of Chicago, are the contractors.

Hugh McVeagh, assistant general manager of the Big Four railroad and in charge of the fuel department of that road, resigned recently to become affiliated with a coal company operating through Cincinnati.

Geo. D. Cameron, Inc., Cleveland, has been chartered with an authorized capital of 2,000 shares, no par value designated to mine, buy, and sell coal and coke. Incorporators are George D. Cameron, Elizabeth Cameron, Winifred Cameron, W. H. Dickey and George B. Young.

The Kehota Coal Mining Co., which has headquarters in Pittsburgh and a large stripping operation at Redfield, near New Lexington, has suspended operations entirely owing to lack of orders.

The High Peak Coal Co., of Columbus, has been chartered with a capital of \$75,000 to mine and sell coal in various fields by Ralph G. Martin, R. McMurray, John W. Bricker, Ralph E. Marburger and E. H. Hauck.

The Blue Flame Coal Co., of New Lexington has been chartered with a capital of \$25,000 to operate in the Hocking Valley, by Sheldon Kinsel, R. W. Murray, Raymond Diller, T. M. Potter and Thomas Ward.

The Board of County Commissioners at Columbus has rejected all bids opened Aug. 8 for approximately 3,000 tons of mine-run coal for various county departments, as too high. It has been decided to purchase the supply on the open market for the present.

Asking appointment of a receiver for the Union Coal Stripping & Mining Co., of Cleveland, and also foreclosure of a \$204,580 mortgage on the property, B. D. Northrup, of Washington, Pa., recently entered suit in Belmont County Common Pleas Court against the company.

The Heinman Coal Co. has been chartered with a capital of \$50,000 to mine and sell coal in the Massillon field. The incorporators are August Heinman, Albert Heinman, Joseph A. Seifert, Albert H. Ess and Felix R. Shepley.

A. P. DeVennish, who has been in charge of the coal department of the Hocking Valley Products Co., for about a dozen years, has resigned to become sales manager of the Jay Miller Coal Co., Columbus. Mr. DeVennish has purchased an interest in the company.

W. J. Buchanan, superintendent of the Willis-Harlan Coal Co., was seriously injured while in the mines and was taken to the hospital in Pineville, according to advices that reached the Kentucky Fuel Co. in Cincinnati, which controls the Willis-Harlan Operations.

A general sales office of the Universal Coal Co. has been opened in Cincinnati, in charge of W. J. Richardson, vice-president, to take the place of those which were maintained at Price Hall, W. Va., where the seven operations of the company are located in the New River district. Eastern sales offices have been located at Richmond, Va., for some time and will not be disturbed.

Appointment of a receiver for the Union Coal Stripping & Mining Co., a \$4,500,000 Cleveland concern, and foreclosure of a \$204,580 mortgage on the company's property were asked in a suit filed in Belmont County Common Pleas Court, July 18. The suit was brought by B. D. Northrup, owner of a Washington (Pa.) foundry, holder of the mortgage.

The Groff-Sharshall Mining Co., chartered several weeks ago with an authorized capital of \$75,000, has taken over the properties of the Consolidated Mining Co., located near Shawnee. The properties consist of five openings and are being operated on a lease basis. Albert L. Groff has been named president and John S. Sharshall, secretary and treasurer. The Consolidated Mining Co., of which Henry Watkins is at the head, has moved into smaller quarters in Columbus, where a general jobbing business will be conducted. K. W. Rittenhouse, sales manager of the Consolidated Mining Co., has resigned, effective Sept. 1.

In an effort to stamp out the I.W.W. propaganda which has been freely circulated among miners in eastern Ohio of late, the district board of sub-district 5, United Mine Workers of Ohio, has suspended **Joseph Bryan** from the union for six months, sustaining Frank Ledvinka, president of the sub-district, who sanctioned not only Bryan's discharge from the plant at Stewartsville where he was working but also his suspension from the union when Bryan and other I.W.W. sympathizers fomented a strike at the plant of the Cleveland & Western Coal Co. and sought to prevent miners from returning to work after the strike was settled.

The American Export & Inland Coal Co. has announced that it intends to liquidate. In its place the Black Diamond Coal Mining Co. has been formed by the six operating companies in eastern Kentucky that have controlled the affairs of the company that passes out. The American Export & Inland Coal Co. was an Ohio corporation formed to take over the business of the American Export & Inland Coal Corporation a West Virginia company with offices in Huntington and Cincinnati. This organization figured prominently in the Ford coal deal when the Detroit manufacturer decided to close down his plant as a slap at the coal brokers. The operators found it necessary to take over the corporation in order to get their money. H. E. Mahan will be the president of the Black Diamond company and L. M. Birk its secretary and H. K. Howard general manager. Ernest Heasley and E. C. Randolph have stepped out.

The Dominion Coal Co., Columbus, has been chartered with a capital of \$25,000 to mine and sell coal and also to do a jobbing business in coke. The incorporators are K. W. Rittenhouse, L. C. Rittenhouse, D. F. Shafer, R. S. Oxley and Carl H. Valentine. The company will open offices at 16 East Broad St., in rooms formerly occupied by the Ohio & West Virginia Coal Co. A general jobbing business will be conducted and

a number of mine connections have been made. K. W. Rittenhouse was formerly sales manager of the Consolidated Mining Co., of Columbus.

OKLAHOMA

The Sullivan Machinery Co., Railway Exchange Building, St. Louis, announces that its Oklahoma branch office and warehouse have been moved from Henryetta to Muskogee in order to serve the coal industry to better advantage in that territory. The new office is at 428 North Second Street and Lysle D. Chase continues as local manager.

PENNSYLVANIA

C. F. Barrett, assistant sales manager of George E. Henry & Son, of East Brady, has resigned his position and intends to enter college.

Business in the Connellsville coke region seems to be picking up a little, and inquiries are more numerous, probably in anticipation of an anthracite strike. The Superior Coal Co., which had been idle for over a month, has resumed operations. The American Coke Corporation is firing 70 of the 142 ovens at the Linn plant, which has been practically idle for a few weeks.

Cosgrove & Co., large operators and shippers of fuel, with main offices in Johnstown, have purchased the R. L. Sproat mine operations and coal holdings near Windber. A new firm has been organized which will be known as the Windber Standard Coal Co., with H. J. Meehan as president and John C. Cosgrove, president of Cosgrove & Co., as secretary-treasurer of the new firm. A charter has been applied for. The new firm has taken charge. The coal is of the best quality in central Pennsylvania.

In filing appeals from tax assessments in Cambria County, the Blubaker Coal Co., owning 8,000 acres of fuel land in the county, and the Clearfield Bituminous corporation, which control 12,000 acres, set forth that the amount of taxes assessed against their lands exceeds the amount of the royalties collected annually on leases in which the owners assumed the burden of paying the taxes. The royalties were fixed years ago when the valuations were exceedingly low. Judge John E. Evans heard the arguments on the appeals and announced that decisions would be rendered later.

Coal production in the Somerset County field is now the heaviest in the history of the field, announces J. S. Brennan, secretary of the Somerset County Coal Operators' Association. Announcement is made that the Baltimore & Ohio R.R. has removed the percentage car supply in the Somerset field and expects to be able to furnish an ample supply of cars daily for the various mines. The removal of the percentage car supply became effective Aug. 9.

TENNESSEE

An involuntary petition in bankruptcy has been filed by three creditors of the Valley Coal Co. and the Valley Coal & Dock Co., Chattanooga.

UTAH

B. W. Dyer, of Billings, Mont., has arrived at the State Capitol to succeed Chief Mine Inspector Allen, who died a few months ago while on a special assignment for the U. S. Coal Commission.

VIRGINIA

Hoffman Bros., Punxsutawney, Pa., are drilling on the Crab Orchard property, Little Black Mountain, near Keokee, Lee County, for the Blackwood Coal & Coke Co., who are planning extensive development work.

WEST VIRGINIA

The capital stock of the Man Mining Company of Huntington has been increased from 1,000 shares par value \$100, to 5,000 shares.

The Lambert Run Coal Co., of Fairmont, in which Clarence D. Robinson and others are interested, has been authorized by the Secretary of State of West Virginia to increase its capital stock from 250 shares of a par value of \$100 each to 5,000 shares of a par value of \$100 each.

In addition to the other indictments in connection with the trial of William Blizzard, president of subdistrict 2, District 17, United Mine Workers, the grand jury on Aug. 10 returned two more indictments against G. C. Mickey, one of the defense witnesses in the first Blizzard trial, concluded several weeks ago. He is charged with offering the Rev. J. E. Wilburn \$1,000

to leave the county and not testify for the prosecution and with having attempted to bribe jurors summoned for the second trial of Blizzard. Although the grand jury was discharged after returning the indictments mentioned, it has been announced by Prosecuting Attorney S. M. Austin that a special grand jury will be called to inquire further into the bribery question.

The Preston Coal & Lumber Co. has just been organized with a view to developing the coal and timber resources of Braxton County, being capitalized at \$200,000. Sutton is to be the headquarters of the company. Identified with the new enterprise are C. Paul Heavener, Fred L. Fox, Thomas McCale, P. B. Adams and E. M. Smith all of Sutton.

With a view to operating in the Kanawha field, the Jennings Coal Co. has just been organized by northern West Virginia coal men, having a capital stock of \$25,000. The office of the company is to be at Monongah. Incorporators are: K. P. Beckner, J. W. Cross and Mary Beckner of Belington, S. J. Jennings of Monongah and J. S. Blackman of Shinnston.

Officials of District 17, United Mine Workers, announce that a constitutional convention of the district organization will be held soon as the outcome of an agitation started by R. M. Williams, James Hart and others in subdistricts 3 and 4 to obtain a stricter accounting of moneys paid into the district treasury. Williams and others working with him assert that fully \$70,000 is paid into the district treasury every month and yet that there is little pretense at accountability. Those behind the movement for a special convention also desire to have the miners' election of last December aired.

One thousand acres of coal land in the Fairmont region have been sold for approximately \$600,000 to Mortimer L. Hudson, of Chicago, secretary of the Hines interests. The purchase includes the plant and holdings of the Rivesville Coal Co. as well as certain tracts of Sewickley coal from the New England Fuel & Transportation Co., John F. Phillips, C. D. Robinson and Jacob F. Straight. The acreage is situated just west of the properties of the Fairmont & Cleveland Coal Co. Senator R. A. Pollock, who was president of the Rivesville Coal Co., will sever his connection with that company to re-engage in the operation of mines, having several propositions in view, although he has not yet consummated a deal. Jacob F. Straight, for some time secretary of the Rivesville Coal Co., will actively manage the Rivesville property for the new owner or owners.

The trial of Edgar Combs, charged with the murder of John Gore, during the armed march against Logan in 1921, will not be held until the October term of court, it was agreed early in August at a conference between John Chafin, prosecuting attorney of Logan County, and C. J. Van Fleet, who appeared for Combs and other defendants. The case had been called for trial on August 2. Combs was not admitted to bail. The most important witness against Combs is the Rev. J. E. Wilburn, who testified in the Lewisburg trial of Blizzard that it was Combs who fired the shot which killed Gore. The case of the state against Harold W. Houston, general counsel for the miners' union in West Virginia, indicted on the charge of being an accessory to the murder of Gore and two other citizens of Logan County, also will go over to the October term through an understanding between Chafin and Van Fleet. When the cases against Combs, Houston and others do come up for trial a change of venue will be sought by attorneys for the union and union men involved in the armed march who have not already obtained such a change.

Having just obtained 150 acres of coal land at Beech Bottom in the Northern Panhandle of West Virginia A. S. Burger and associates are making preparations to begin development. The coal acquired is in the Pittsburgh seam and is said to be of unusual thickness. The acreage acquired is said to have cost approximately \$60,000. In opening a new mine, the new owners of the coal property will construct a tippie which may be utilized for loading coal either by rail or water.

S. A. Moore and associates, of Charleston, have launched the Charleston Coal Corporation, which is capitalized at \$50,000, with a view to engaging in the coal business in the Kanawha region. The office of the company is to be at Charleston. Associated with Mr. Moore as incorporators are A. J. Peck, J. F. Meadows, E. L. Ballard and W. Frederick, all of Charleston.

Purchase of 110 acres of Pittsburgh coal underlying the Lewis Cunningham estate on Dolls Run in Monongalia County, by W.

K. Hatfield, is regarded as the forerunner of extensive development in that section. The tract adjoins other tracts already held by Mr. Hatfield who it is said will soon sell the combined acreage to an independent coal company. That company is understood to be preparing to undertake the development of the acreage. The consideration involved for the 110 acres was \$50,000 or approximately \$455 an acre.

The Pond Creek Pocahontas Co. has closed a contract with Harry M. Waugh, a railroad contractor of Bluefield, to construct trackage leading to the company's operation and around the plant. The company is preparing to operate on an extensive scale at Bartley, in McDowell County, served by the Dry Fork branch of the Norfolk & Western railroad. A shaft is being sunk to the Pocahontas seam. Coal men chiefly identified with the Pond Creek Pocahontas Company are also the principal figures in the Island Creek Coal Co., operating in Logan County. Thomas B. Davis, of New York, is president of the Pond Creek Pocahontas Co. as well as of the Island Creek Coal Co.

Coal mines in the Winding Gulf, New River and Kanawha fields sustained heavy damages along with the Chesapeake & Ohio Ry. and the Chesapeake & Potomac Telephone Co. as the result of cloudbursts on the morning of Aug. 12, following freshets of the week previous. Numerous landslides were caused on the main and branch lines of the Chesapeake & Ohio in the very heart of the coal regions of southern West Virginia and particularly between Sewell and Quinnimont, there being several large slides near Piney Creek, Loop Creek and Laurel. On the main line coal freight traffic was held up for 36 hours.

Improvements now under way at the Thacker mines of the Thacker Coal & Coke Co. in the Williamson field will make the plant one of the most modern in the state. The cost will be not less than \$500,000. The company expects in September to show just what the improvements may mean in point of increased production. The Thacker company, of which Col. T. E. Houston is the directing head, is developing the territory on the west side of the creek preparatory to producing coal on both sides of the creek. The new tippie, of the endless chain, or conveyor type, is the last word in mining methods, making it possible to load five different grades of coal at one time. The tippie has a capacity of a railroad car per minute. The company also is building new stone headhouses, new stone retaining walls and is eliminating many curves in its trackage. It is proposed to install many new mining machines and to add many new steel mine cars to the equipment. In installing scales, the company will in the future pay its miners on a tonnage basis instead of a car basis.

The safety-first meet of the Bethlehem Mines Corporation, in which teams from eight different operations of that company participated on Aug. 17, is said to have been the most successful ever held in the Decker's Creek Valley. The contest was won by the team representing the Bretz mine. The Sabraton team took second place and the team from the Richard mine took third place. On the winning team were Edward S. Gurr, Charles B. Eye, N. B. Watson, E. J. House, H. Friend and William G. Johnson. The winning team was presented with a silver loving cup, purchased with the proceeds of a fund raised by the contributions from the superintendents of the various mines. The winning team will be sent to Buffalo on Sept. 22 to represent Preston County Division No. 3 in the general competition of the Bethlehem corporation when mine men will be pitted against mill men. Teams were entered from the following mines: Richard mine No. 21, O. T. Barnard, superintendent; Bretz mine No. 22, Weston Datson, superintendent; Kingwood mine No. 24, Harry Shaffer, superintendent; Sabraton mine No. 25, W. L. Coburn, superintendent; Masontown mine No. 26, C. C. Werner, superintendent; Burke mine No. 27, Ira Fluck, superintendent. A. W. Lauther is the general superintendent of the company in the district and was in charge of the meet held at Masontown. There was printed on the program for the day's events a list of "some of the things a first-aid man should know."

WISCONSIN

The Link-Belt Co., Chicago, Ill., has obtained the contract for furnishing the equipment for handling coal and ashes at the new Riverside pumping station, Milwaukee. The amount involved in the contract is \$40,000.

WASHINGTON, D. C.

The Finance Committee of the National Coal Association appointed to serve during

the company year includes: Ira Clemens, president, Clemens Coal Company, Pittsburg, Kan.; L. C. Crewe, president, LaFollette Coal & Iron Co., LaFollette, Tenn.; E. L. Douglas, vice-president, First Creek Mining Co., Cincinnati; Harry L. Gandy, executive secretary, National Coal Association, Washington; M. L. Gould, president, Linton Coal Co., Indianapolis; S. Pemberton Hutchinson (chairman), president, Westmoreland Coal Co., Philadelphia; W. J. Sampson, president, Witch Hazel Coal Co., Youngstown, Ohio.

No definite steps will be taken by the District Commissioners to supervise the coal situation in Washington this winter until the national government has concluded its present efforts to avert a strike. In the meantime the city heads will keep in closest possible touch with every development so that they will be prepared to act intelligently and promptly should another fuel emergency arise this year.

CANADA

Howard Stutchbury, Alberta Trade Commissioner, has been addressing the boards of trade of a number of cities in Ontario where resolutions have been passed calling on the Government to assist in securing better freight rates from Alberta to Ontario than have yet been promised.

The Ferguson administration in Ontario will spend no more money on the Alfred peat manufacturing experimental plant. An Order-in-Council has been passed authorizing disposal of the premises and the newly developed cutting and drying machinery to a private individual who will operate it as a private enterprise.

According to Secretary Peacock of the Alberta mine workers, some five thousand of whom are out of work, a formal protest will be framed by the United Mine Workers against the importation of coal from the United States for use on certain sections of the Canadian National Railways.

Sir George B. Filmer and H. C. Zwarg, of the Anglo-Canadian Collieries & Refineries, Ltd., Edmonton, Alberta, are in Toronto in the interests of their company. The company, which recently obtained its charter, has acquired the rights of the Molecular Process, which was originated in Germany, and proposes to manufacture briquets from Alberta coal.

John McLeish, of Ottawa, Director of Mines for the Department of the Interior, said recently that over one thousand tons of Minto coal were used for domestic purposes in Ottawa last season. In addition to this amount which has been used for domestic purposes, the importation into Ottawa of 30,000 tons of Minto coal has been advertised there.

William Sloan, Minister of Mines, and George Wilkinson, chief inspector, inspected Nos. 4 and 5 Mines, Canadian Collieries (D), Ltd., Aug. 7 and 8. The Minister was impressed with the development work being carried on at No. 5 Mine, where two rock slopes have been driven to tap what is known as the Farm Seam.

Roy M. Wolvin, president of the British Empire Steel Corporation, which includes the Cape Breton coal mines, said recently at Montreal that irrespective of the quantity of bituminous coal coming in from the United States, there is ample soft coal in sight produced in Canada to meet all requirements for the future, whether American strike conditions make an abnormal demand or not. With regard to the British Empire Corporation, Mr. Wolvin said that during the strike it lost a great deal of production and had to replace a lot of this from the United States, which was a dead loss to Canada and Canadian labor. Due to the strike, their bituminous production in July had been 380,000 tons less than in June.

Fifty carloads of Alberta coal have been shipped to Ontario points over the Canadian National Ry. lines at the rate of \$7 per ton. This will enable a number of tests of the coal to be made to ascertain whether it will be acceptable to consumers. The officials of the Canadian Pacific Ry. have decided against the proposal to transport Alberta coal to Ontario at a \$7 rate, which is regarded as being below the actual cost of transportation.

One hundred thousand tons of Alberta coal placed on the Ontario market at prices which will compete with American anthracite is the proposition put forward by a deputation from the western province which called upon Premier Ferguson in Toronto. Attractive prices which will make this competition possible are to be secured by shipment by rail as far as Fort William and by the lake route thereafter to Ontario points.

Premier Ferguson, of the Province of Ontario, is reported to be working for a lower freight rate on coal shipped from the Province of Alberta to Ontario. He proposes presenting certain facts and figures to Sir Henry Thornton, president of the National Railways, which he hopes will result in the fixing of a lower rate than that of \$7 a ton, which has been extended to cover trial shipments aggregating 6,000 tons. Premier Ferguson is convinced that sufficient tonnage could be guaranteed to justify a rate that would permit Alberta's product to compete with Pennsylvania coal.

The newly introduced Self-Rescuer is being thoroughly tested in British Columbia and, if found to meet the claims of the manufacturers no doubt will be introduced on a considerable scale. Experiments are being carried out at Cumberland and at Nanaimo this month. The apparatus is said to give the wearer protection for seventy minutes against carbon monoxide gas.

Coal production of British Columbia during July exceeded that of June by about 26,649 tons. This is due chiefly to the Coal Creek Colliery of the Crow's Nest Pass Coal Co., whose output rose from 22,254 to 45,905 tons. The explanation is better demand and, as the market for this coal, particularly at this time of the year, is industry, in the forms of railways, smelters, etc., the improvement is both significant and gratifying. In the main the other active collieries of the province have about held their own. On Vancouver Island the Canadian Collieries (D), Ltd., mined 4,442 tons more in July than in June but the Western Fuel Corporation, Nanaimo, dropped some 846 tons. The Granby Collieries, Cassidy, also had a shorter output by some 912 tons while Messrs. King & Foster, operating the new mine in the vicinity of Nanaimo, show an advance of about 100 tons. In the Nicola-Princeton field the Coalmont Collieries produced in July 595 tons more than in the previous month while the Middlesboro Collieries and the Princeton Colliery dropped slightly. Aside from the Coal Creek Colliery the situation in the Crow's Nest field shows little change from that prevailing in June, the Michel Colliery and the Corbin Coal & Coke Co. being about in the same position in July as in the previous month as to production. Following are the details for July:

VANCOUVER ISLAND DISTRICT	
	Tons
Comox Colliery	25,111
Extension	20,027
South Wellington	7,393
Western Fuel Corporation of Canada	
No. 1 Mine	25,294
Reserve	18,471
Wakesiah	7,569
Granby M. S. & P. Co.	18,714
Nanoose Wellington Colliery	5,317
East Wellington Colliery	3,824
King & Foster	913
Total	132,633

NICOLA-PRINCETON DISTRICT	
Middlesboro Collieries	5,737
Coalmont Collieries	10,204
Princeton Collieries	780
Total	16,721

CROW'S NEST PASS	
Coal Creek Colliery	45,905
Michel Colliery	14,491
Corbin	3,059
Total	63,455

Total for province

212,809

Three thousand miners in District 18, United Mine Workers of America, including Alberta and part of British Columbia, are now out of work and in many places mines are running only on half time, according to the union officials. Much of the unemployment is in the mining fields that customarily supply the Canadian National Rys. with steam coal, while the slackening in the demand for domestic coal has resulted in the laying off of approximately 1,500 men in the Drumheller Valley.

A delegation of Alberta coal mine operators, headed by Sir George Filmer, waited on the Government of Ontario on Aug. 15 and announced that they were prepared to deliver 100,000 tons of coal during the coming autumn and winter at a price that would compete with United States coal, despite the unfavorable freight rates that the Canadian National Rys. have quoted. Sir George and his associates are interested in the Drumheller coal mines which at the present time are suffering from lack of business, in the neighborhood of half of the miners in the district being out of employment.

Obituary

James Burns, for fifteen years district field man of the Illinois Coal Association, died at his home in Springfield, Aug. 13. Mr. Burns' death was sudden and unexpected. He had been ill for a few days.

Louis H. Spier, traffic manager for the Stephens Fuel Co., New York City, died on Aug. 12. He had been connected with James Stephens & Son, later the Stephens Fuel Co., with the exception of a short period, since 1891.

Oscar F. Arnold, 79 years old, a veteran of the Confederacy and for many years in the coal business at Webb City, Mo., died recently at his home in that city. He was a native of Virginia and early in life moved to Buncheon, Mo. He served one term as a member of the lower house of the Missouri Legislature. The widow and one son, W. M. Arnold, of Kansas City, survive.

David Taylor, vice-president of the Coal and Iron National Bank, died in New York City Aug. 22, at the age of fifty years. Born in Jersey City, he was graduated with honors from the Pennington Seminary in 1888. Previous to his connection with the bank, of which he was vice-president, he had been with the Western National Bank and the Liberty National Bank. He was a director of Burns Brothers, the Madison Trust Co., the Wendell P. Colton Co., and the Harry J. Schnitzer State Bank. His home was in Madison N. J., where he was trustee of the First Presbyterian Church.

Thomas Fitzsimmons, 43 years old, one of the owners of the coal mines at Melbourne, Mo., died at the Wright Hospital in Trenton, Mo., where he had been taken to have an operation performed following an injury at the mine when a rock weighing 300 lb. fell from the roof of the mine and crushed him. His back was broken in three places and his entire body was paralyzed. In spite of his grave injuries he lived two weeks after the accident. He was a native of England and had lived for a time in Canada.

James M. Savage, general manager for Canadian Collieries, Ltd., died suddenly Aug. 12 at Wilson Creek, Washington, while on a motoring trip through that state. Mr. Savage was born at Three Rivers, Quebec, in 1865. He was identified with railroad and lumbering in Ontario and Manitoba until 1906, when he with associates organized the Pacific Coast Coal Mines, from which he retired five years later. He was appointed manager for Canadian Collieries in 1916, with head office at Victoria, and held that position until his death.

William Prince, one of the leading business men of the Winding Gulf region of West Virginia and closely identified with the coal industry of that section, died at Prince, W. Va., on Tuesday night, Aug. 14. Mr. Prince was largely interested in several mining companies and owned much stock in going coal concerns. He was 81 years of age and until within a few months prior to his death he had taken an active interest in the many enterprises in which he was interested.

Association Activities

The Illinois-Wisconsin Retail Coal Merchants' Association called an informal conference of the heads of the various mid-West coal merchants associations to a conference which was held recently in the offices of Secretary I. L. Runyan of the bi-state organization. Those in attendance, in addition to Mr. Runyan, were: C. A. Bruce, secretary of the Twin City Coal Exchange, Minneapolis; W. J. Womer, chairman of the transportation committee of the Chicago Coal Merchants' Association; F. E. Reeves, secretary of the Detroit Coal Exchange, and D. F. Roberts, traffic manager of the Indiana Coal Merchants' Service Bureau, at whose instance the conference was called. Various problems in regard to the handling of loss and damage claims and faulty weight problems were considered. It was declared to be the desire of those in attendance to evolve some standard basis for filing of claims, as it is thought uniformity in this matter will be advantageous. This was the first of a series of meetings which are planned to be held at intervals of about ninety days.

The regular meeting of the **Columbus Coal Bureau** was held Aug. 20 at the Chittenden Hotel, when F. W. Braggins, president of the Lorain Coal & Dock Co., was the principal speaker. Mr. Braggins, who was one of the prime movers in the formation of the bureau and also chairman of the publicity committee told of the purposes of the organization. He also talked on present conditions in the coal trade and predicted better times for the producer as well as others engaged in the industry. It is planned to have speakers in other lines of industry appear before the association at various intervals and tell of their experiences in other lines of business.

Traffic News

W. J. Smith has been appointed district manager of the Car Service Division of the American Railway Association with headquarters in Omaha, Neb., effective Aug. 15, 1923. Mr. Smith will have the authority of the Car Service Division in Nebraska, Wyoming, Colorado, Utah, Idaho, exclusive of Pan Handle, and Iowa terminals at Council Bluffs and Sioux City. The apportionments of territory assigned in circular of Jan. 11, 1923, which extended jurisdiction of the district manager at St. Louis over the State of Nebraska, of the district manager at Dallas over the State of Colorado, and of the district manager at Chicago over the terminals at Council Bluffs and Sioux City, Iowa, are thus amended accordingly, effective Aug. 15, 1923.

It has become definitely known in the past few days that the **Louisville & Nashville R.R.** has plans for two physical connections to its recently leased **Carolina, Clinchfield & Ohio R.R.**, provided the Interstate Commerce Commission approves of the lease, which is being fought by the Seaboard Air Line R.R. and the State of Georgia. The Louisville & Nashville proposed to connect its Eastern Kentucky division as well as Cumberland Valley division, one connection being made from the Lynch, Ky., district, and the other from McRoberts.

In the case of the **Indiana Power Co. vs. the Pittsburgh, Cincinnati, Chicago & St. Louis R.R.** and **James C. Davis**, Director General of Railroads, as agent—No. 13946—the Interstate Commerce Commission on July 20 ordered that defendant, James C. Davis, Director General of Railroads, as agent, pay unto complainant, on or before Oct. 17, 1923, the sum of \$63.28, with interest thereon at the rate of 6 per cent per annum from Aug. 30, 1919, as reparation on account of an unreasonable rate exacted for the transportation of three carloads of run-of-mine bituminous coal from the steam tracks of the Pittsburgh, Cincinnati, Chicago & St. Louis R.R. at Edwardsport, Ind., to complainant's plant at that place.

The **Seaboard Air Line R.R.** system, backed by the Georgia Railroad Commission, will appear before the Interstate Commerce Commission on Sept. 24, at the hearing relative to the Atlantic Coast Line R.R., through its subsidiary the L. & N. Ry., having leased the Carolina, Clinchfield & Ohio R.R., under a 999 year lease, as an outlet from southeastern Kentucky to the A. C. L. connections to the Atlantic coast. The Seaboard will argue against the Interstate Commerce Commission's granting permission for the L. & N. to operate as proposed.

In the case of the **Webb Fuel Co. vs. the Director General of Railroads**, as agent—No. 13253—the Interstate Commerce Commission ordered July 20 that the defendant pay the complainant, on or before Oct. 17, 1923, \$45.09, with interest at the rate of 66 per cent from Jan. 1, 1919, as reparation on account of an overcharge on a carload of coal shipped from Ferndale, W. Va., to Madrys Spur, N. C.

A test is to be made of the federal statute enacted in 1920 providing that charges on C. O. D. freight must be collected before delivery. This case is the outgrowth of a suit by the Western Maryland Ry. against James E. Cross, a prominent coal operator of Mineral County, W. Va., for the recovery of freight charges on coal delivered before the freight bill was paid. The lower court found for the plaintiff on the strength of the federal statute mentioned. The case is to be appealed to the West Virginia Supreme Court.

Judge Thomas R. Gordon and Judge Henry S. Barker, in a written opinion, have decided in favor of seventy-five foreign railroads, defendants in a suit of the Commonwealth of Kentucky, seeking to collect taxes on rolling stock in the state and not listed for taxation. The opinion, a lengthy one, held that the state had no right to collect

the taxes, pointing out that witnesses on both sides had testified that no accounting is kept as to the number of cars in Kentucky at any given time. To keep the sort of check necessary if the cars were to be taxed, each railroad would have to maintain a bureau in the state, the court held, thus placing a burden on interstate commerce which would be prohibitive.

According to well authenticated reports, **Henry Ford** and **George L. Carter**, who had a prominent part in building the Virginian R.R., are about to combine forces in building a new railroad from Bluefield to Wilmington, N. C., and thus provide another route from the coal fields of Kentucky, West Virginia and southwest Virginia to the seaboard. It is understood that the automobile manufacturer has given his endorsement to the project, although plans for the construction of the road are said not to have gone beyond the embryonic stage. Soon after acquiring the Pond Creek coal properties, Mr. Ford indicated that he might extend the D. T. & I. Ry. to Pond Creek and since then there have been rumors that he might seek to build through the Logan field. If the D. T. & I. should be extended to Williamson there would still be another link between Williamson and Bluefield to be built, before constructing a line through to Wilmington, N. C. Mr. Carter, formerly identified with several railroad projects in Tennessee, is making his headquarters at Millsville, Va., where he is an operator of coal mines.

The Interstate Commerce Commission on Aug. 15 ordered a hearing on the lawfulness of the rates, charges, regulations and practices of the schedules contained in the new tariff of the **Mobile & Ohio R.R.** known as Supplement No. 3 to I. C. C. No. B-540, applying to bituminous coal from mines in Illinois to certain stations in Missouri, to have become effective Aug. 16. The hearing is to be held Sept. 18 at 10 a. m. at the Hotel Jefferson, St. Louis, Mo., before Examiner Flynn. The commission also ordered that the operation of the said schedules contained in said tariff be suspended, and that the use of the rates, charges, regulations and practices therein stated be deferred upon interstate traffic until Dec. 14, 1923, unless otherwise ordered by the commission, and no change shall be made in such rates, charges, regulations and practices during the said period of suspension unless authorized by special permission of the commission.

The Interstate Commerce Commission has issued an order, effective Sept. 5, supporting the contention that the **Chestnut ridge**, not **Laurel ridge**, should be the dividing line for rate making purposes, between the Meyersdale and the Connellsville districts. The effort to relieve the Indian Creek Valley from the differential imposed by making the rate from points on the Indian Creek Valley railroad the Meyersdale rate plus 10 cents, began about eight years ago, when the commission was petitioned to extend the western boundary of the Meyersdale rate district to a line marking the crest of Chestnut ridge. The action was opposed by the Baltimore & Ohio Ry. on the ground that Laurel, not Chestnut, ridge was the natural boundary between the Somerset and Fayette county thin vein coal deposits.

Coming Meetings

New York State Coal Merchants' Association will hold its annual convention on Sept. 10-12 at Sacandaga Park, N. Y. Executive secretary, G. W. F. Woodside, 250 Arkay Building, Albany, N. Y.

Oklahoma Coal Operators' Association will hold its annual meeting Sept. 13 at McAlester, Okla. Secretary, A. C. Casey, McAlester, Okla.

The **American Mining Congress** will hold its twenty-sixth annual convention in conjunction with the National Exposition of Mines and Mining Equipment, Sept. 24-29, at the Milwaukee Auditorium, Milwaukee. Secretary, J. F. Callbreath, Washington.

National Safety Council will hold its twelfth annual safety convention at the Buffalo Statler Hotel, Buffalo, N. Y., Oct. 1-5. Secretary, W. H. Cameron, 168 No. Michigan Ave., Chicago, Ill.

The **West Virginia-Kentucky Association of Mine, Mechanical and Electrical Engineers** will hold its annual meeting Oct. 19-20 at Huntington, W. Va. Secretary-treasurer, Herbert Smith, Robson-Prichard Bldg., Huntington, W. Va.

Coal Mining Institute of America will hold its annual meeting Dec. 19, 20 and 21 at Pittsburgh, Pa. Secretary, H. D. Mason, Jr., Chamber of Commerce Building, Pittsburgh, Pa.